GLASGOW . LONDON - STOCKTON-ON-TEPS SWANSEA WIGAN and OVERSEAS.

Vietnamese

take capital

of Cambodia

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Monday January 8 1979

GENERAL

BUSINESS

day, following an agreement between employer and trade union representatives. But there

are hurdles to be cleared before

return to work becomes

The accord was reached after

15-hour talks on the 41-day-old strike, which has so far cost the

country DM 600m (£161m).

The settlement covers pay in-

creases and free time, but is based on a 40-hour working

To that extent, the key de-

mand for a move towards a

35-hour working week by IG-Metall, the steelworkers union,

may be seen by some union

members as unfulfilled. Back

BL foundry

plan attacked

BL COMPONENTS' an-

nouncement last night that it is pressing ahead with a £24.7m plan to build an aluminium

foundry on a 25-scre site at West Yorkshire Foundries,

Leeds, was met with an outcry

from the private sector. In spite of BL assurances that

the company will still meet 40

cylinder needs from private companies the Light Metal Pounders Association said the move could journatise 200m of

planned investment

O UK PROCESS plant

award was achieved against

Mitsui of Japan. Back Page

ANNUAL rate of retail

inflation is likely to have

to be published this week are

• FUTURE of the South Wales

coal industry, which lost £30m last year and is expected to lose

at least as much this year, is

to be debated tomorrow by a sub-committee of the Coal

Industry Tri-partite group, chaired by Mr. Anthon Wedg-

wood Benn, Energy Secretary.

NEXT Finance Bill may con fain tax relief for companies on

after promises from Treasury Ministers, Back Page

SHELL NEDERLAND reports

an improvement in refinery

and Trading Group is experi-

chemicals division. Page 29

activities in Holland for the

COMPANIES

expected to show. Page 4

cent of its block and

Top oil German steel groups sued peace likely by U.S.

Nine major oil companies are being taken to court by the U.S. for alleged overcharging amounting to at least \$1hn. The companies include Exxon, Mobil

and Texaco.

The suit, filed in Washington's district court by the U.S. Justice and Energy Departments, alleges that the companies breached Federal pricing regulations on natural gas liquids. It says they inflated prices in dealings among subsidiaries and set an artificially high market value.

This is the latest move in a campaign to clear up what the authorities say are illegal pricing practices stretching back to the 1973 Arati oil embargo. The

the 1973 Aran oil embargo. The other companies named are Gulf Amoco, Atlantic Richfield, Shell, Phillips and Cities Services. Back Page

Army warned

King Juan Carlos of Spain gave an unprecedented call to order when he told chiefs of the armed forces that once an army lost its sense of discpline it ceased to be an army. His remarks followed the funeral of Madrid's assassinated military governor at which some army officers shouted anti-government slogans. Page 2

Tanker verdict

Portugal will decide today Portugal will decide today whether or, not to allow the crippled Greek tanker andres Patris into the port of Listave for repairs. The decision is likely to rest pure whether 200,000 tonnes of crude can be trainferred from the tanker suiteds.

Uister call

freiand's Foreign Minister Michael O'Kennedy has urged Minister and Cables. Back Page initiative in an effort to break the stalemate in Ulster. The all is seen as a new step in Irish policy. Page 4

Thawing out

Most of the UK was thawing out after a week of snowbound-misery, but British Airways had flights out of London Heathrow at the weekend because baggage remainer within the range of elevators had frozen up. Fore 8 per cent last month, figures east, Back Page

Peru strike

Army units and riot police moved into position in Lima. Peru, and provincial centres shead of the Communisted 72-hour general strike due to rear tomorrow. A state of cost industry, which lost emergency has been declared and martial law imposed Page 2 at least as much this year to be debated tomorrow sub-committee of the

Fwo people were wounded and Industry several houses tample fire when chaired by nembers to the realist Syrian wood Ber peace keeping force opened fire Page 5 on Christian militias in Lebanon.

Kennedy wanted

I'wo opinion polls published by the Los Angeles Times suggest that voters would prefer Senater Edward Kennedy to President Carter as the Democrats Presidential candidate next year.

Brunel and the UK signed a treaty giving the sultanate independence by 1983. Alabama Governor George Wallace, who leaves office pext week, said goodbye to sup-

porters at a rally in Most - CENTRAL Manufacturing First of the new 175,000 weekly, encing growing demand for to mark the deams Premium Bond prizes goes to products, according to Mr. Nor protests last week-the Barnet, London holder of man Bickman, chairman Page. There were fears

13ZW 662815.

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FEATURES

The Iranian Crisis: Its Effects on British Cas. 10 The Struggle to Avert Venice from decrept-

Air France: Era of Mass Transport and Cheap

FT SURVEY

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For latest Share Index phone 01-246 8026

World Econ. Ind.... Base Leading Rates

Ministers meet on lorry strike's pay policy implications BY NICK GARNETT & ELINOR GOODMAI

As the private-haulage lorry drivers' strike spreads to more areas today, Ministers in two Cabinet committees meet to discuss the effect of the dispute on pay policy, and on supplies to industry and shops.

a State of Emergency at this

stage, though it would review the over-The stoppage, now hitting all position, no improvement on industrial production in some areas, is being extended today to South Wales and the Eastern Countles. There will be tightening of disruptive picketing in parts of the Midlands and North. An "emergency centre" at the Ministry of Agriculture begins operations this morning collectng and acting on inquiries from the food, farming and fishing industries, which face the

The National Farmers' Union is holding an emergency meeting the assess the extent to which animal feed supplies are

most severe immediate effect of

Disruption to cargo-handling in some major dock areas, in-cluding north Humberside, Liverpool and Tilbury, is likely to be extended to smaller ports. Picketing by drivers on indus-trial sites is expected to be reinforced on south Humberside and in the West Midlands, including Wolverhampton. Senior negotiators for separ-

The Government declared Association, which has bad its yesterday, bowever, that there pay offers of 15 per cent rewas no question of introducing jected, meet in London today. association said that

> the offers was planned. The association's West Midlands region has reached agreement with union officials but the settlement simply involves a at the highest general level

reached at negotiations in other

regions. Some unofficial picketing is expected to continue in the area where the strike has been poorly supported. In the oil delivery dispute four of the five main companies were still optimistic that their

worth 12 to 15 per cent. Shop stewards for drivers at Esso and Shell meet today. British Petroleum stewards tomorrow and Mobil later in the

drivers would accept offers

A decision to accept would isolate the 1,100 Texaco tankerdrivers and ancillary workers who have rejected 15 per cent, and whose picketing of other companies' depots has curtailed ate regions of the Road Haulage petrol deliveries.

Mr. Moss Evans, general secretary of the Transport and General Workers' Union, which represents the drivers, criticised the Texaco men for taking unojificial action and said they should abide by any decision to accept the offers at other com-

Ulster, where almost all filling stations have run dry, commitment on the part of Manchester and the North-West, employers to fix new pay rates and North London, have been the most severely affected by a combination of picketing and unofficial action by tanker-

drivers at other companies. Some BP drivers in the Midlands, including those at the important Kingsbury depot which feeds Shell, came out un-

officially at the week-end. The General Cabinet Committee, chaired by Mr. Merlyn Rees, has been meeting regularly since before Christmas preparing contingency plans in the event of

a national tanker drivers' strike. In a separate meeting of the Cabinet committee dealing with pay policy. Ministers will review what has happened since they last met before Christmas. Yesterday there seemed a

flicker of optimism among some Continued on Back Page

West agrees China must not affect detente

By RICHARD EVANS AND ROBERT MAUTHNER IN GUADALOUPE

o GOVERNMENT is to be a ged to help improve the quality of product design in father and using by insisting on high standards from companies with which it deals. The proposals WESTERN LEADERS agreed at against too much euphoria in French nuclear forces should are contained in a report by Mr. Renneth Corfield, managing director of Standard Telephones ensure that developing economic the West and China and political contacts with China must not affect the crucial and the Soviet Union.

facturer. Constructors John Brown, has won a £26m contract to build a petrochemicals plant for Chies, currently expanding its chemicals industry. The CJB This, fogether with outspoken European support for a SALT 2 significant outcome of what appears to have been a successful attempt to maintain and strong competition from Uhde-Hogenst of West Germany and improve a common front between President Carter, President Giscard d'Estaing, Chancellor Schmidt and Prime Minister Callaghan on political and security issues affecting the

> President Carter, summing up his view of the wide ranging discussions on the French Caribbean island, said the U.S. Government was determined to support the emergence of China as a world power but this must not be allowed to become an

obstacle to detente.

And Mr. Callaghan stressed that the relationship between the West and the Soviet Union remained central to the security of Western Europe.

Chancellor Schmidt, although not opposing the prospective Franco-British arms sales, including the vertical take-off

he two-day summit here to the opening of relations between be thrown into the negotiations.

relationship between the West lar, dominated the summit, a nuclear independence. concensus was reached on a range of issues including Iran, Turkey and Southern Africa.

It was decided it was essential to pump financial aid rapidly Turkey to support the crumbling economy of a country on NATO's vital eastern

None of the four leaders gave any indication of support for the Shah of Iran and President Carter and Mr. Callaghan had an hour's talk on Rhodesia.

The Americans were particularly relieved at the strength of support given by the three European leaders to the conclu-SALT negotiations. There appeared to be a concerted move to try to persuade the U.S. Senate to zatify SALT as soon as negotiations are completed by President Carter and

Mr. Brezhnev, the Soviet leader. The prospect that SALT 3 will deal with the reduction of strategic arms aimed specifically at Suropean targets will almost certainly lead the Soviet Union Harrier jet, sounded a warning to demand that the British and

The U.S. will face strong oppo-Although security matters, sition from France which is un-and the SALT talks in particu-willing to allow any dilution of The French claim that the

British position on the subject is very close to their own, but there were strong, indications here that Mr. Callaghan had taken a more flexible line. As far as Britain is concerned. much will depend on the extent to which the Soviet Union is prepared to accept limitations on the number of its new powerful SS-20 missiles and Backfire bombers which have been developed for use against

Western European targets. During the discussions on disarmament, President Giscard's proposal for a Europe-wide disarmament conference covering. sion and early ratification of the conventional weapons, received

a mixed reception. President Carter, Mr. Callaghan and Herr Schmidt emphasised that they wanted to press ahead with the current mutual and balanced force reduction talks (MBFR), from which the French have stood aside. Mr. Callaghan nevertheless said that M. Giscard's proposal was interesting and worthy of study. The Guadeloupe Summit Page 2

editorial Comment, Page lu

raising loans and a relaxation in provisions covering interest on overdue tax. A further extension of the stock relating scheme of 1974 is almost certain. on day of mourning

BY JONATHAN CARR

final quarter of 1978, although there was little change in the exupted in Tehran yesterday work: during a day of mourning declared by the new Government of Dr. Shapour Bakhtiar to mark the deaths of anti-Shah

> There were fears that similar trouble would occur today because of another day of mourning. This one was called by Ayotollah Khomeini, the Paris-based religious leader. The call also has the backing of the main local Moslem leaders. On Saturday Ayotollah Khomeini denounced the new government as "illegal" and as a plot of the Shah to stay in Dower.

. He called for the struggle against the Shah to continue.

The new Government, which wear worn in by the Shah on Saturday, consists of 13 members besides Dr. Bakhtiar, most of them technocrats of no previous political affiliation.

Key members are General Fereidoun Jam, a retired armed services chief as Minister of War, and Mr. Ahmed Mir-Fendereski, a respected diplomat at Foreign Minister. The other ministers, although lacking a political following, will have the task, vital to the success of the Government, of persuading strikers in the key

An immediate priority of the Government is the trial of as many as 30 former ministers, including ex-premier Amir Abbas Hoveida, on corruption charges. Mr. Cyrus Amouzegar. the Minister of Information, said yesterday: "The Govern-ment's first task would be to pass a new law to deal with these offences."

The early departure abroad the Shah is considered crucial to the success of the new government. Parliament is expected to meet on Tuesday striging oil workers. But out-when its approval of the new put is only 285,000 barrels a Cabinet will be sought: The day compared with a maximum Shah told the new ministers on attainable 6.5m barrels a day. Saturday he would be leaving Domestic requirements are Iran for a rest and that he was about 700,000 barrels a day.

SPORADIC street violence economic sectors to return to tired of bearing all the responsibilities for the country.

In keeping with the Constitu-tion, the Shah will be represented after his departure by an appointed Regency Council. before during previous absences of the Shah. Economic dislocation con-

tinues. Banks and shops were shut as part of the day of mourning, and there were still long queues for petrol and fuel for heating. Oil production has increased despite an agreement with

London Brick to close plant

London Brick's joint produc-tion plant outside Tehran is to close temporarily because increasing difficulties in maintaining the continuous production needed for brick making. Frequent power cuts and a lack of fuel to fire the kilns have caused the problens. The plant has not been involved in any civil dis-

The Tehran London Brick Company was formed in 1975 with £5m capital to build and

plant. London Brick has a 20 per cent share and has to date invested about £500,000 in the project. Other partners are the Iranian Industrial Credit Bank (20 per cent). the Tehran Guild of Brickmakers and the Iranian public (about 30 per cent each).

Effects of Iran crisis on

British companies, Page 10 U.S. banks take cautious line, Page 2

Thatcher hints at curb on unions

By Elinor Goodman, Lobby Staff

MRS MARGARET THATCHER floated the idea of abolishing the right to strike of workers in essential industries such as gas and electricity when she spoke on television of big

changes in laws affecting unions. She confirmed that a Tory Government would introduce a law to help trade unionists hold secret ballots when they wanted

Conservative Leader appeared to adopt a more abrasive attitude to the unions than those in her party specifically responsible for dealing with them.

Interviewed on London Week end Television's Weekend World, she linked in a new way two ideas which have been gaining popularity in the party in the last few months secret ballots and withholding of social

security benefits to strikers.

Mrs. Thatcher said that if a consider giving social secuirty work a Tory Government might voluntary ballot system did not and other benefits only to strikers who agreed to industrail action after a secret ballot. Though she may have given

the impresion that the Tories would throw the book at the unions, she did not say much that had not been said before by the party's front-bench employment spokesman.

But her tough attitude to the unions will have comforted those on the Right who feel that the party may be getting too close to the unions. The legal immunity enjoyed

by unions would be reviewed she said, by a Tory Government in the light of the "very different power structure which existed today. The unions had been "put above the law" because at the time it was thought that they

needed such immunity to get decent wages. Now conditions had changed totally. As a Parliamentarian she was not prepared to enable anyone to have a "licence to inflict harm and damage on

others and be immune from At the moment there were some sectors, such as gas, electricity and water, in which the unions had the power to hold the nation to ransom.

This immunity, ironically, was given the unions as a result of the Tories' own Industrial Relations Act, but there were certain services so vital that the right to strike might have to be reviewed. A Tory Government would

try to tax short-term social security benefits received by strikers, and give workers the right to legal compensation if sacked because of a closed shop.

VIETNAMESE FORCES with against possible Chinese attack the help of Cambodian insurgents yesterday made a surand captured

capital, according to an announcement, over Radio It claimed that the two-week invasion of the country was carried out by insurgents and

BY DAVID HOUSEGO

advance

said Phnom Penh and half Cambodia had fallen into their The pro-Vietnamese forces stormed into the city which has

now witnessed its second "liberation" in three years at 17,30 GMT. A few hours before that Phnom Penh Radio, the official broadcasting station of Premier Pol Pot's Government, went off the air.

There was no news of Pol Pot but it was assumed that in line with a strategy believed to have been worked out with the Chinese four months ago, he decided to abandon the capital -indefensible against superior vietnamese ground forces—and attempt to fight a protracted guerrilla struggle with his base in the jungle south west of Phnom Penh. The city was almost deserted after the forced agreements of its population by evacuation of its population by the Pol Pot regime.

Before the pro-Vietnamese forces took Phnom Penh, the President of the Kampuchea (Cambodia) Natinoal United Front for National Salvation (KNUFNS) — established a month ago-issued a radio call for surrender to the Pol Pot

Aggressor

In deciding on a lightning campaign to overthrow the Pol Pot regime, Vietnam has has been in Cambodia.

gambled on achieving a swift The Soviet official
solution to the conflict at the agency TASS announce. risk of being branded an aggressor. Vietnam in its present economic plight cannot afford to get bogged down in another costly local war.

Before the fall of Phnom Penh, the Chinese were reported by intelligence sources to be heavily strengthening their forces, along the border with Vietnam in what was evidently an attempt to deter the Vietnamese from further encroachments in Cambodia,

sought protection the Phuom Penh regime." recently

through a 25 year Treaty of Friendship with the Soviet Union. This provides for consultation in the event of either side being attacked. Phnom Penh, the Cambodian

Though the Chinese are deeply concerned at the extension of Vietnam's—and hence of Russia's—influence in Indochina that military success has brought, it is now thought unlikely that they will risk action that could create open conflict with Russia or her allies.

The Chinese tactic would seem to be to continue supporting guerilla resistance to the regime. To do this, they will be dependent on access through Thailand for supplies. The Front is expected to seek

ally as the legitimate govern-ment of Cambodia. It will almost certainly obtain this from both Vietnam and Russia. In an attempt to soothe the hostility of other South-East Asian nations, the new regime has said that it wants a policy

good neighbourliness with

rapid recognition internation-

Soviet view

other Asian States.

Prince Norodom Sihanouk. the former Cambodian Head of State, has flown to Peking from Phonom Penh on his way to New York. He will accuse Vietnam of invasion at the Security Council.

Significantly Chinese accounts of the conflict have ceased to mention Pol Pot's name—an indication that they are possibly hoping to replace him by Sihanouk as a fraure more acceptable in Vietnam and inter-

Until his arrival in Feking, Prince Sihanouk had not been seen for two years although he

The Soviet official news TASS announced fall of Phnom Penh in a brief communique without comment. But recent Soviet Press comment has come out strongly against what it describes as "the reactionary Pol Pot-leng Sary clique" and has voiced support for strong support for the Cambodian Salvation Front

(KNUFNS).

The Soviet view, expressed through the media, is that the Front "enjoys broad support among the people of Cambodia Such a move had been fore who have risen in a just seen by the Viet nese who struggle for the overthrow of





THE INDO-CHINA CONFLICT

The new rulers of Cambodia

BY DAVID HOUSEGO, ASIA CORRESPONDENT

now nominally in charge of the capital Phnom Penh can be expected to seek diplomatic recognition as the country's legitimate government as quickly as possible. Established only a month ago under the wings of Vietnam as the National Union Front for the Salvation of Kampuchea (KNUFS), relatively little is known about its organi-

sation and leadership.
One of its major difficulties in gaining support in the country and abroad will be that it will be considered by the Khmer population as a puppet government under the control of Vietnam with whom the Cambodians have a long history It is apparently of hostility. It is apparently because of this that the Chinese have turned to Prince Norodom Sihanouk, the former Cam-bodian head of state, and once a popular, flamboyant figure to

champion their cause in the guerrilla fighting that is now likely to ensue, The President of KNUFS is Hang Samrin, 44, a former sup-

Premier, Pol Pot, who in 1976

THE NEW Cambodian regime and deputy chief of the military an attempt to win popular announced an eight-point pro-now nominally in charge of the zone bordering Vietnam. Along sympathy against the harsh gramme for administering "the capital Phnom Penh can be with Chea Sim, 46, vice-presi-with Chea Sim, 46, vice-presiwith Chea Sim, 46, vice-president of the Front, he appears to have taken part in the abortive attempt to overthrow Pol Pot last May. But the best known member of the insurgent movement is So Phim, the former vice-president of Cambodia, who also took part in the revolt last May. He has not been named, however, as one of the 14 members of the Front's

Central Committee. In an effort to smooth rela-tions with the ASEAN States. apprehensive of a Vietnamese take-over of Cambodia, the Front has called for a policy of good neighbourliness with other South East Asian States. It also yesterday condemned the attlempts of Premier Pol Pot tto internationalise the conflict with Vietnam through reference to the Security Council by saying that this was contrary to the principle that "the internal

affairs of Kampuchea are to be settled by the Kampuchean people themselves without foreign interference" and con-

trary to the UN charter.

freedom of movement, associa-tion and religion, and to abolish the resettlement policy under which people were forced to leave their homes and work in

special communes. In sharp contrast to Pol Pot's the territory.
unpopular policy of attempting City dwelle to control the family unit and impose state control on children, the Front declared that it would abolish com-pulsory marriage and "restore the happy life of every family." It has announced that it after would establish banks, restore 1975.

money as a unit of exchange—abolished under Pol Pot—and lay down an eight-hour working On foreign policy, its views not unexpectedly come close to those of the present Vietnamese government, in supporting efforts to build "South East Asia into a region of peace. independence. freedom, neutrality, stability and pros-perity." Cambodia, it has said,

would not join any military alliance or allow foreign bases

Yesterday the rebel Front

on Cambodian soil.

For soldiers who surrendered or were captured, it promised only a five-day re-education period but said that those who who did not give themselves up could face unspecified periods of confinement.

the setting up of "people's self management committees"

drawn from victims of the Pol

Pot regime, revolutionaries and

trusted people who would have

responsibility for administering

City dwellers, it said, would

be allowed back to their former residences when the overall

situation in the country allowed

-an implicit promise to allow

people back to Phnom Penh

which was heavily depopulated

after Pol Pot took power in

to reintroduce the currency, but the Front said that workers

would be remunerated in kind.

There was no immediate plan

The Soviet news agency Tass. gave details of the Front's programme—adding strentgh to the belief that the Soviet Union wil be one of the first countries to recognise the new regime,

Washington unclear on Soviet role

Premier. Pol Pot, who in 1976 The Front's programme, was made a political commissar announced on December 3, is

BY JUREK MARTIN, U.S. EDITOR, IN WASHINGTON ALTHOUGH THE U.S. State border with Vietnam in a clear Vietnamese capture of Phnom Penh could "seriously aggra-vate" the situation in China, the actual fall of the Cambodian capital came as little surprise here. There was ample evidence last week pointing to the possible collapse of the Cambodian forces and it was widely noted that the Government of China

Cambodian leader, to retreat into guerrilla warfare against the Vietnamese invaders. There is uncertainty here, however, as to what Vietnam Russian hostilities, which could will do next. China has quickly assume major interrecently significantly built up national proportions. This, how-

Hungary

raises

had publicly urged Pol Pot, the

warning to Hanoi to restrain itself: but U.S. officials generally

believe that China does not want to invade Vietnam. At the same time, it is unclear here if the Soviet Union is either able, or willing, to restrain its client state Vietnam. There were reports circulating

here that Soviet troops had been

observed moving on the Chinese border but their veracity could

not be confirmed. From the U.S. standpoint, the 'worst case" scenario would be an outbreak of direct Sinoa military strength along its ever is considered unlikely.

There is greater concern that Vietnam, acting on its own, or at the behest of the Soviet Union as a counter to the normalisation of Sino-American relations, would pursue militarily aggressive policies not only in Cambodia but towards Thailand and Laos.

Arguing, however, against this, is the belief of some officials here that Hanoi wants desperately to improve its own international economic conditions and could not entertain such expansionism as a result.

Direct U.S. influence over either Cambodia or Vietnam is non-existent, while official policy remains that disputes between

the concern of the U.S. It is reasonably certain that arguments in favour of moderation have been pressed in both Peking and Moscow. To a limited extent, in con-demning the Vietnamese inva-

two Communist states are not

sion, the U.S. may appear to be more sympathetic to the plight of Cambodia (although officials here are at a loss to explain why Cambodia should have attacked Vietnam in the first place). But it is freely admitted that the Government of Pol Pot is a blot on the international scene and that any replacement, even one operating as a guerrilla force, or in exile, would

Juan Carlos calls for discipline

prices By Paul Lendyai in Vienna STEEP PRICE increases for petrol and a wide range of cougoods come into force today in Hungary but it is to be an army. claimed that the increases will not affect the projected 4.7 to order followed the funeral last attack from the extrane Right impact on the public image of new treaties if the U.S. Congress

4.9 per cent rise in the overall consumer price index for 1979. According to the official communique, the price of standard and premium grade petrol will go up by 25 per cent, of tobacco and eigarettes by 30 per cent, of rice by 50 per cent, of building materials and beer by 20 per cent. As of February 1, newswas King said. papers will cost 40 per cent

As before, the latest price increases are motivated by the need to adjust domestic prices to those on the world market, particularly with regard to imported goods.

It is understood that Hungary. along with the other Comecon states will this year have to pay about 20 per cent higher prices for Soviet crude oil than last year. But Western economists estimate that the cost of subsidised investments by the other Comecon members in the development of the Soviet raw material base together with the effects of inflation with regard to additional Soviet oil deliveries combine to produce an even larger increase in the real price of Soviet crude for the East European buyers. Hungary will this year import about 8.5m tons of Seviet crude.

The Soviet Union accounts for almost 100 per cent of Hungarian imports of crude and refined products. Meanwhile the 1979 economic plan just released by the Gov-ernment, warned that real wages per head will increase

this year only by 1 per cent as against an estimated 3.2 to 3.5 per cent in 1978. Mr. Ference Havasi, the Central Committee Secretary in charge of economic affairs stressed in a new year economic report in the party daily. Nepszabadsaz that the rise in living standards must be "more closely harmonised" with real economic possibilities.

He also revealed that last year exports to the hard currency areas rose only by 4 to 5 per cent instead of the projected 12 to 13 per cent. At the same time the import bill in terms of hard currencies jumped by 15 per cent as against the planned B per cent. Reuter reports from Prague:

Mr. Pavel Landovsky, 42, a dissident actor and playwright will leave Czechoslovakia for Austria next Thursday on a long-term working visa. Mr. Landovsky was one of the original signatories of the Charter 77 human rights manifesto and was twice arrested, spending a total four months in dentention.

The 730-day visa carried two stipulations. The first was that

while outside the country he must observe the laws of Czechoslovakia, effectively barring him from making any statements critical of the regime. The second was that he can return home for a holiday only once a year.

BY ROBERT GRAHAM IN MADRID KING JUAN CARLOS turned a Mistakes can be corrected, but a night club near San Sebastian.

armed forces, into an un-expectedly tough lecture on the need for discipline. He bluntly his way to congratulate the terrorist death toll to five.

warned that once an army loses Defence Minister. General The search for the assessins its sense of discipline, it ceases Guizerez Mellado. for his con- of General Ortin has so far met

Thursday of the assassinated military governor of Madrid, General Ortin, which resulted in a number of officers giving the Fascist salute and shouting anti-Government slogans. This kind of military indiscipline "really shameful,"

forces over the wave of terrorist attacks against them, the King insisted they must not be proinsisted they must not be pro-

weekend ceremonial meeting a soldier or an army that loses. This was the first time a person with senior member of the discipline is no longer an accompanying a member of the

duct at the Ministry, His liberal with no success. On the con-This unprecedented call to reformist policy is under bitter trary it has had a negative said, may have to renegotiate and at Thursday's funeral most the police. A special search conof the slogans were directed ducted by some 4,000 policemen against him, calling for his resulted in the arrest on Friday

of the King's speech-at a time to play more of a back seat role their car which had been with the party of the new con-stitution — underlines the Meanwhile at While sympathising with Government's concern over the Saturday a policeman open members of the armed forces behaviour of the armed forces and of the para-military security provoked by increasingly fre-failed to stop when challenged. quent Basque terrorist attacks against them.

making mistakes. Civil and his girl friend outside the Press here.

army," he said. security forces had been killed.

The King also went out of Their deaths brought the week's security forces had been killed.

resignation. of seven Basques who subse-The overtly political content quently proved to be a pop group and three persons who when the monarchy is expected had come to Madrid to collect

Meanwhile at a road block on This resulted in the death of a 15-year-old boy who was accom-

Unions challenge Lisbon regime

PORTUGAL'S conservative nonchallenge from the Communistdominated central trade union
dominated central trade union
meant to match the forecast Dutch tugs, is reported limping
meant to match the forecast Dutch tugs, is reported limping
meant to match the forecast Dutch tugs, is reported limping
meant to match the forecast Dutch tugs, is reported limping
meant to match the forecast Dutch tugs, is reported limping party Government faces a strong tion of the 20 per cent wage rise inflation rate for the year. Thus slowly south just outside limit imposed last year by the unions agreed to no improve- Portugal's 200-mile economic Dr. Mario Soares's Socialist-led coalition.
CGTP, claiming to represent

the nationity of the unionised labour force, said at the weekend that the wage restraint policy had ended on the last day of 1978 and wage claims would be in line with cost-of-living increases.

Sr. Mota Pinto's Government had earlier issued an official statement reaffirming the cur-

the time of the economic aid Andros Patria, is to be repaired deal signed with the Inter-national Monetary Fund last or moved elsewhere. ment in living standards during zone. It is under surveillance by

CGTP's latest challenge is tonne clearly aimed at reminding the Promise, present Government of the conditions of the bargain and also special lightening tanker, the at warding off rank-and-file British Dragoon, have been unrest at a time when a rival sent to transfer the 200,000 Socialist-backed central trade tonnes of BP-owned Iranian union organisation is making crude which has not spilled inroads. Meanwhile a decision is

rency of the 20 per cent ceiling. expected today on whether the in its side caused by explosion. The measure was adopted at crippled Greek super tanker, off north-west Spain a week ago

the year, which was accepted as the Portuguese many and is a short-term sacrifice.

a companied by the 250,000-BP tanker British

from the damaged ressel. Andros Patria has a 45-foot gash

Militia 'will resist' Lebanon force

BY DAVID LENNON IN TEL AYIY

THE ISRAELI-backed Christian resist any attempt by the troi of the South it was resist any attempt by the troi of the South it was resist any attempt to send the border with Israel through the South, the which the Christians currently which the Christians currently forces in southern Lebanon will at the weekend, according to Israel radio.

Five months ago the Christians blocked a move south by 2 Lebanese batallion because they said the Lebanese soldiers were hand-picked by the Syrians were sympathetic to the Christian forces

worried by reports that the Government in Beirut intends to send Lebanese forces to replace the Iranian and French troops, which are expected to be with-drawn from the UN forces in the South.

Israel radio, the war Council of the Christian Militia along the General Emmanuel Erskine.

receive supplies, medical aid and market their goods.

Once the border is closed they fear that the Polestinian guerrillas will try to dominate the area as they did before the Israeli invasion last March. In Jerusalem, the Government

announced that Israel will give refuge to 100 of the Vietnamese refugee boat people now waiting on ships in the South China sea. A special plane will be sent to pick up the refugees and they will be offered Israeli citizen-ship when they arrive here. AP reports from Cairo:

In a statement quoted by President Anwar Sadat was quoted as saying at the weekend that reports from Israeli diplothat the unstable situation in mats that a meeting of low-level Israeli border, said the plans to Iran lent new urgency to signing send Lebanese troops was a a peace treaty with Israel and prior to another shuttle by the "dirty trick" conceived by the he was ready to sign "right U.S. Secretary of State, Mr. "durty trick" conceived by the he was ready to sign "right U.S. Secretary of State, Mr. UN forces and their Commander now." The Egyptian leader Cyrus Vance were "without Concent Employer Concent Employer Concentration of State, Mr. made his remarks to a seven- basis."

The Christians are airaid that member delegation of U.S. Conif the Lebanese army takes con-

Mr. Donald Mitchell, who said he took notes of the meeting, quoted Mr. Sadat as saying. "I'm ready to sign at this moment, right now. What is happening in Turkey and Iran makes it vital that we act now."

tion of when renewed negotia-tions might get under way, U.S. Representative Laurence McDonald

The acting Foreign Minister, Mr. Butros Ghali, meanwhile, told a news conference in Cairo representatives would take place

Mr. Sadat told the Congress-men during the closed-door meeting that he believed talks would be resumed soon and that it was only "a matter of time" before a peace treaty would be signed but he gave no indica-

China wall poster appeals for detente

A dramatic wall poster calling for detente with the Soviet Union and the removal of the late chairman Mao Tse-hung's body from his mausoleum drew big crowds in Peking over the weekend, but doubts were raised about its authenticity, Reuter reports from Peking. The poster, signed by an organisa-tion calling itself the Chinese human rights league, appeared overnight on Peking's democracy wall and demanded sweeping changes in the way the country is run. It dealt with several subjects believed to be troubling many Chinese but also raised other issues regarded by foreigners as unusual in the context of the political changes other issues regarded now taking place in China. In particular, they noted a call for peace with the Soviet Union, China's sworn enemy, praise for the Soviet people and demands for publication of such topsecret statistics as the military budget, the strength of the armed forces and details of military aid and economic aid supplied to other countries.

Refugee boat move

HONG KONG has taken strong measures to stop organised racketeers bringing refugees to the colony by ordering all ships to obtain prior permission before entering Hong Kong, AP reports from Hong Kong. A Govern-ment spokesman said that masters of all Hong Kong-bound ships must notify the Marine Department of the ships' nationality, the number of people on board, type of vessels and reason for calling at the colony before entering Hong Kong waters. He said violators were liable to a fine of HK\$20,000 (US\$4.255) and to possible imprisonment of one ear. The order followed per sistent reports that organised racketeers together with the Vietnamese Government were collecting millions of dollars from nationals fleeing Vietnam.

Panama warning

A LEADING U.S. Congressional. opponent to the Panama Canal treaties has said he hopes Panamanians react "maturely if Congress refuses to approve funding for the accords when they come before Congress this month, AP reports from Panama, The U.S. Congressman, Mr. George Hansen, an Idaho Repubircan, also said he still opposed tne treaties after a two-hour meeting with the Panama President Sr. Aristides Royo. U.S. and Panama, Mr. Hansen refuses to approve funding for the two accords, reached after

Afghan border move

Thousands of guerrillas, some armed only with 19th century muskets, are converging on a strategic town in eastern Afghanistau for what could be a major battle in their campaign to oust the Kabul regime, according to dissidents. Reuter reports from Peshawar. The guerrillas, fighting in the name of Islam, are hitterly opposed to the pro-Communist Afghanistan Government which took nower in a coup last April. Dissident Afghans in Peshawar on the Northwest Frontier said more than 5,000 guerrillas were poised some nine miles from Chiphu Serai, capital of Kunar Province.

Pakstan poll call

The Pakistan People's Party (PPP) of former Prime Minister Zulfikar Ali Bhutto has called for national elections by March 31 at the latest "in view of the prevailing internal and external situation." AP reports from Islamahad. The demand followed a meeting by the PPP's Central Executive Committee in honour of Mr. Bhutto's 51st birthday. The deposed Prime Minister and party leader is currently in jail under a death sentence for ordering the killing of a political opponent four years

India to buy airbus

India is to buy another A-300 Franco-German airbus to add to Indian Airlines' existing fleet of five airbuses, according to officials. Reuter reports from New Delhi. A Cabinet decision has been reached but the officials have made no mention of an agreement being signed yet. A spokesman of Indian Airlines said the wide-bodied airbus was expected to be delivered by October this year and would be used to asso the and would be used to ease the rush on domestic routes. He said the airline had asked Government's permission to buy another 278-seater airbus.

S. Yemen attack Marxist South Yemen has

launched an armoured attack on the neighbouring North Yemen district of Al Bayda, the Lundonbased newspaper Ash-Sharq Al Awsat reported at the weekend, according to Reuter from Jeddah. The newspaper, which is also published in Jeddah, said a South Yemoni armoured brigade, supported by fighter planes, began the attack in the morning on the border province. It quoted a North Yemeni. official in the capital of Sanaa. THE GUADELOUPE SUMMIT

Sun, SALT and Sand

BY ROBERT MAUTHNER IN GUADELOUPE

a holocaust provoked by the massive use of strategic nuclear weapons, one of the main sub-jects of the Guadeloupe fourpower summit. You can rush around tearing your hair and collapse with a nervous breakdown at the awful prospect, or you can pretend that the U.S. Soviet nuclear arms race is just another sticky international problem which can be solved by reasonable men. President Carter, President

Giscard d'Estaing, Mr. Callaghan

and Her Schmidt, happily for

their countries and the rest of the world plumped for the second procedure. But the atmosphere at their Caribbean meeting was so casual, relaxed and idyllic that it might wellbe asked whether they did not risk losing all sense of reality. To underline their claim that they were having no more than a friendly chat in the sun while

Europe was in the grip of one of the severest winters in the past two decades, they brought their wives along, a privilege granted to only a few of the richest journalists covering their meeting. President Carter even brought his irrepressible

selves on an adjoining beach. Bresident Carter's Chief Security Adviser, Mr. Zbigaiew Brzezinski and the Secretary to the British Cabinet, Sir John Runt, even swam around to have a look at them, while ostensibly engrossed in more

serious matters. With all these attractions around, the "big four " sometimes appeared to have trouble in getting together. One Americould bring the Prime Minister ts covering their and Mrs. Callaghan out to pose and atrocities in Cambo lent Carter even for a group picture, received But we were told the irrepressible the acid reply from the French at least as important.

THERE ARE only two ways in daughter Amy to complete the head of state that this was not possibility or the prevention of They were housed in separate had already donned his swim-

bungalows, each equipped with ming trunks.

a living room, bedroom and ... Her Schmidt meanwhile, was kitchenette, surrounded by a having great trouble dealing mass of brilliant tropical with coconuts. A distinguished flowers, with a balmy Caribbean reporter, who watched him sea practically lapping their feet attack the unaccustomed fruit at table, described the scene ing to keep the world at bay as follows: "To get at the milk. ing to keep the world at bay.

While they talked idly about inter-continental ballistic missiles. Harrier jet contracts with China and the future of their falled, he drove the blade into the fruit and save it a missile. siles, Harrier jet contracts with China and the future of their less fortunate colleagues, the Shah of Iran, in a simple palmthatched hut, topless bathing beauties were disporting themselves on an adjoining beach. Schmidt thought if was a German steel worker. While their husbands were busy in these various ways the

wives went sight-seeing. Andrey Callaghan's "marvellously frumpy white dress and wide-frumpy white dress and wide-brimmed Margaret Rutherford-style hat" was much admired by the American Press pool reporter present when the four families and form to me handle families sat down to one lunch. It was all a far cry from snow can photographer, who asked It was all a far cry from snow President Giscard whether he drifts, lorry-drivers, and steelworkers strikes, riots in Iran and atrocities in Cambodia. But we were told that it was

THE CRISIS IN IRAN

Caution by U.S. banks

BY STEWART FLEMING IN NEW YORK

SOME U.S. banks have been foreign currency reserves. Thus cautiously scaling down their it is argued, assuming these commitments in Iron in recent, estimates are accurate. Iran does months until they can get a not immediately face the sort of clearer view of the likely impact international liquidity crisis ex-of the current crisis on the perienced in recent years by country's finances banking sources in the U.S. say.

But opinions differ about how long it will be before the country's economic and political problems seriously affect its domestic and international financial situation.

Many bankers remain reluctant to take an aggressive line in trying to reduce their exposure in Iran for fear of aggravat-ing the current situation. And they also do not want to be seen only as fair weather friends. They hope that once stable government is restored their patience now will be rewarded; by new business in the future from the oil rich state.

Major concerns are the im-

part of sirikes on the foreign payments made by and through banks some sources say payments have slowed down but not stopped-and of course the impact of the curtailing of oil exports on Iran's foreign exchange earning ability. Bankers point out that high il export levels have been required to meet import and

debt payments. There are fears too that an exodus of technical personnel essential to the Ironian economy could undermine confidence in the future. Perhaps the most optimistic assessment of the country's

financial situation is that, according to some U.S. bank estimates, the Central Bank of Irun has perhaps \$101-12bn on

CROWN PRINCE Fand of

Saudi Arabia has come out

strongly for the Shah remain-

ing in Iran and has, more guardedly criticised the Moslem opposition to the Shah in an interview with a Saudi newspaper over the weekend, Jame Buchan writes from Jeddah. In the strongest Saudi statement yet issued in the Shah's support, the Crown Prince told the Riyadh newspaper Al-Jazirah that "wesupport the Shah's position and his continued presence in the country." In a discreet but clear reference to the Shi'ite Moslem opposition, the Crown Prince said: The situation is not in the interest

of Iranians themselves, Islam or the Moslems. The Shah is the legitimate power in Iran." The statement reflects the anxious concern in the Saudi Government and business community that the turnoil in Iran may expose social and military weaki Arabia and the Gulf and could ultimately aggravate divisive elements in other part of the

countries such as Portugal and Turkey. Even at last year's import levels these reserves are enough to cover about nine months of imports one banker sugegsted, changes,

Middle East.

fallen back sharply and while in the long term this is not healthy economically it means that the loss of the oil revenues should not immediately provoke a crisis in Iran's ability to meet foreign payments assuming conditions in the country are stabilised in the coming months.

One source at a major U.S. bank suggested that there is more concern about the ability: of the government to finance itself. He suggested that the Iran Government could shortly be forced to seek further loans a move which would present international banks with a formidable decision.

Last year Iran attempted to drive a hard bargain with international bankers seeking funds at around one half a percentage point above LIBOR, a rate which several banks were unhappy with and which, according to one source, meant that loan commitments were not signed before the crisis flared up.

As of June of last year, according to a study prepared by the comptroller of the currency. U.S. banks had just over \$2bn of loans in Iran, but this total would include private financing some of which, for example, could be guaranteed by U.S. companies with opera-

tions in Iran. Of greater concern in the long term, even assuming stability is restored rapidly, is the impact of the political crisis on certain projects being financed in Iran which may not proceed to the point of earning revenues because of policy

Oil supplies 'serious' says IEA

BY TERRY DODSWORTH IN PARIS

though not yet an emergency, has been created by the drying up of oil exports from Iran, according to the Paris-based International Energy Agency.

The IEA said at the weekend, that it would be "pretty nervous" if Iran's oil output continued at its present low level until March. But the agency believes that it should be able to avoid putting into effect its erisis oil-sharing system over the next three months.

The rules of the 19-member IEA which includes most of Western Europe, the U.S. and Japan, state that the emergency oil-sharing programme, can be put into effect once normal supplies are reduce by 7 per cent. The agency is due to take a decision of whether to enforce this plan on January 20 when it will have built up a clear idea of the long-term Western supply

the agency's hope that the dis- first quarter of the year, accord- found:

A SERIOUS oil supply situation, ruptive effects of Iran's prob-though not yet an emergency, lems can be contained. First, other all producers within the Organisation of Petroleum Exporting Countries can probably make up much of the Iranian shortfall in the near future. Secondly, demand from importing countries will probably decline in the next three months because of the miums ranging from \$1.75 to build-up in oil company stocks before Christmas to beat the 14.5 per cent OPEC price rise contract price increases far in anounced in December.

Iran is normally the world's

second largest oil exporter after Saudi Arabia, producing a maximum of 6.5m barrels a day. maximum of 6.5m barrels a day. "Hawks" counter that com-This is about 10 per cent of the mercial realities must dictate world's daily oil supply and a fifth of OPEC production. AP-DJ reports from New York: Although the Iranian crisis has driven prices sky high for the small amount of crude oil available on the spot market,

ing to Petroleum Intelligence Weekly. In its issue published today. the weekly says the size of con-tract price increases is under hot debate within oil companies with executives taking sides as "hawks or doves" on the issue.

selling are commanding preexcess of the OPEC rise will create problems in oil-consum ing nations and possibly provoke a new round of OPEC increases. contract pricing and that " give-

The small volumes of spot oil

way deals" will not stem the unward price spiral anyway. In either case, refiners concede that they are almost totally at the mercy of suppliers for the first quarter, since the alternathere is more concern in oil tive to refusing contract supplies industry circles about prices for is to pay even more for spot Two main factors, underlie big volume-contract deals in the market supplies if they can be

Arrests herald Peruvian strike

BY NICHOLAS ASHESHOV IN LIMA

ARMY UNITS and riot police Peruvian Workers (CGTP), strike decisively because weakmoved into key positions in Peru's bigegst union grouping, Lima, main provincial towns which is closely associated with

The Government has declared a state of emergency and imposed the equivalent of martia llaw, Union and political informants say that security police have rounded up 120 union leaders and left-wing politicians in Lima. At least an equal number are likely to have been detained in the minug camps and provincial towns.

Sr. Gustavo Espinoza, head of Peru's Moscow-line Communist Party and Sr. Alfonso Barrantes president of the Peruvian Democratic Union (UDP) a Marxist

Two prominent men held are

the General Confederation of

and large mining centres yester the Moscow-line Communist challenges in a few months challenges in a f support of higher wages.

For the past three years Peru has been moving deeper and deeper into economic crisis. Inflation last year was 75 per cent and real wages have dropped by over 40 per cent in three years. The strike is not being sup-ported by the centrist APRA which represents about a third of the electorate and is horing that the military will help it take over control of the labour movement from the Communists.

APRA leaders say that the military Government led by General Francisco Morales confederation.

General: Francisco Morales subscription for series posterior of the Strike has been called by

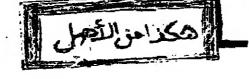
Bermudez is going to take a Second class posterior and the strike has been called by tough line and try to crush the centres

ness now, would result in stronger and more frequent

Today's stoppage will be the third general strike against Gen. Morales's Government During the first in July 1977. over 40 people died in clashes with troops and police. In the second called for 48 hours in May last year, 20 people died. Union leaders are believed to be planning to prolong the latest strike indefinitely with the aim of bringing down the military who have ruled Peru

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since 1968.



Carter to announce draft of GATT package today

BY JUREK MARTING U.S. EDITOR, IN WASHINGTON

a new implifications trade era customs officials are simply not the first formal step in collecting the duties that other what is likely to be the difficult process of searcing. Conservation of searcing conservation of searcing conservation of the internal publication of the resident has the agreements of the resident has the authority imilaterally to sign designed to present them in the authority imilaterally to sign designed to present them in the countries are designed to present them in the countries. By the same token, the Government procurement code the tariff aspects of the trade best possible light as serving pacts, the non-tariff elements, plus certain enabling legislation,

nd

must go through the Congress. leaders on the multilateral trade negotiations (MFN) agreements sell them effectively on Capitol last week in preparation for the reconvening of the legislature of a greater-than-usual number on January 15. In a letter of new Congressmen and notifying Congress of his in Senators in the apcoming tent to enter into the pacts.

Mr. Carter said they were Thus, in summarising the to ensure that the international code on subsidies and countertrading system is both fair and residing duties. trading system is both fair and

In fact, the agreements themselves are not yet finally in place the delay resulting from Congress to extend the Press countervailing duty law."

Congress has dent's authority to waive the The U.S. has, nonetheless, itself suscep imposition of countervailing conceded in this code its prein the past. the refusal of the last session of

France defers

Turkish debt

ANKARA — Turkey and France have signed an agree

ment here deferring payment

of FFT 530m owed by Turkey

to the French Government and

Under the agreement, the Turkish debt, which is, or is coming, due, will be repaid in six to eight years with 7.8 per

cent interest rate for private

loans and 3.5 per cent for gov-

ernment loans, Finance Ministry

officials said. They added that the agreement also provides for

the release of a project credit

credit of FFr 60m to Turkey.

Turkey has signed similar

debt reschedulement agreements for a total debt load of

ment with the Organisation for

Economic Co-operation and De-

velopment (OECD).

private concerns.

THIS MORNING the Carter dufies beyond January 2, paredness to adopt the hitherto Administration will be making Request for such an extension absent "injury test." common public the draft feature of the will also be submitted to Conagreements designed to usher in gress and in the meanwhile U.S. a new multipational trade era. customs officials are simply not proved before countervalling

American interests. Most of the details of the codes covering the non-tariff elements have The Administration began been public knowledge for some formally briefing Congressional time but it is still clearly incum-leaders on the multilateral trade bent on the Administration to

> valling duties, the Adminstra-tion argues that it will permit the US to "limit foreign government subsidy practices without sacrificing the ability to make effective use of

Government procurement code "will increase opportunities for American and other exporters to bid for sales to foreign governments."

Left more uncertain at this stage are the parallel nego-tiations on agricultural trade. Mr. Carter promised Congress full consultation on "several agreements on agricultural trade that we intend to enter

It is freely conceded inside the administration that the congressional passage could be rough. As the American economy begins to slow down and as unemployment begins to rise in the months ahead, demands for protection for U.S. industries are bound to mount. Congress has frequently shown itself susceptible to such pleas

World Economic Indicators

| U | ACIAL FO LIM | ENI . | | |
|--------------------|--------------|----------|-----------|-----------|
| | | | Oct. 78 | |
| UK 000's | 1,320.7 | 1,338.9 | 1,360.0 | 1,428.4 |
| % | 5.5 | 5.6 | 5.7 | 6.0 |
| Holland | 209.1 | 209.2 | 210.2 | 204.7 |
| % | 5.3 | 5.3 | 5.3 | 5.3 |
| W. Germany 000's | 1,096,7 | 927.0 | 901.6 | 1,090.7 |
| % | 4.4 | 4.1. | 3.9 | 4.8 |
| Barbara - Arthrill | Nov. '78 | Oct. 78 | Sept. '78 | Nov. '77 |
| France 000's | 1,330.0 | 1,344.1 | 1,284.0 | 1,054.9 |
| % | 5.7 | 5.7 | 5.5 | 5.1 |
| Belgium 000's | 297.1 | 279.9 | 268.6 | 296.7 |
| % S. % | 7.5 | 7.0 | . 6.J | 7.4 |
| U.S. 2- 900's | 5,900.0 | 5,900.0 | 0.000,6 | 6,800.0 |
| * * * | - 5.8 | 5.8 | 6.0 | 6.9 |
| | | Aug. 78 | july '78 | Sept. '77 |
| Japan 2002s | 1,250.0 | 1,210.0 | 1,150.0 | 1,050.0 |
| | 2.2 | 2.3 | 23 | 1.9 |
| | | July '78 | ٠. | Oct. 77 |
| 34-40- | | 1,658.0 | | 1,598.0 |
| | 7.5 | | 7.2 | 8.0 |
| | 1 | | • | |

Brazilian trade gap increases

By Diana Smith in Rio de Janeiro

RAZIL was to have achieved trade surplus of about \$500m n 1978. Instead, by the end of November, the trade gap had

widened to \$899m. In November, \$1.24bn worth of goods were imported and \$1.12bn exported, resulting in a monthly deficit of \$116m-somewhat larger than the "few pennies here or there," Sr. Mario Simonsen, the Treasury Minister, had predicted for the month. Moreover, imports for the 11 months totalled \$12.35bn \$346m more than in January-November, 1977, and exports totalled \$11.45bn — \$69m less

than the exports total for the comparable period in 1977. Sr. Simonsen, announcing the November figures, stated that he doubted whether the trade gap for the full year would reach \$1bn. However, monthly trade gaps since the beginning of the fourth quarter of 1978 have tended to be larger than the Treasury Minister's predic-

The solid performance of manufactured goods, particularly vehicles, with foreign sales in 1978 of \$1.2bn, means that for the first time in Brazil's trading history, the manu-factured exports accounted for the largest percentage of exports (52 per cent) with com-modities, Brazil's traditional representing remaining 48 per cent. However, this ratio is some

what distorted because total export revenue was down by \$1.5bn. This was due to the persistently sluggish percommodity formance of exports, particularly coffee, soya and sugar, because of poor weather, lower world prices and other problems. In addition grain, vegetable and meat production for domestic consumption dropped severely. so that the authorities turned to importing these staples to ensure supplies.

The aspiration to achieve a a services deficit, likely to be about \$5bn, swelled by interest and repayment on a foreign debt now calculated at \$41bn, payment of royalties or technology transfers estimated at at Kharg Island, Iran last week. close to \$500m for the full year, charter of ships (while, Brazil builds up its own merchant the fleet) costing \$550m for the African and Caribbean sea areas, year and other items that, in a country which does not attract mass tourism, cannot be balanced out by this invisible

U.S.-CHINA ACCORD

Ford reacts calmly to Taiwan 'shock'

FOREIGN INVESTORS in situation), and pulled out. decision to withdraw diplomatic Lio Ho Group, badly needed a Government and establish an tise from outside the country, year when Ford was making customers who want early de-

increase their stake in the country. An example is Ford Motor Company, which chose the aftermath of President Carter's normalisation broadcast as the moment to announce that it would implement a \$30m expansion plan at its Chung Li plant ontside Taipei where Granadas, Cortinas and Escorts are assembled, and partly manufactured, for the Taiwan domestic market.

Ford is producing 90 cars a day at Chung Li (or would be if the recen: strike at Ford UK had not obliged it to cut back temporarily on production of Escorts and Cortinas). It will be building 170 cars per day by early 1980 plus about 70,000 engines per year (double the present number) of which a substantial proportion will be exported to Australia and the Philippines.

1972 after a Japanese company, Toyota Motor, which had previously been involved in a licensing agreement with a local Taiwan company, had got cold feet (because of the political

Embassy in Peking.

Some are not only planning to stay but are also planning to increase their stake in the increase the increase their stake in the increase the increase their stake in the increase taking over a trained and experienced labour force (although one that spoke mainly Chinese

and Japanese). local market wanted something more stylish, if also a little more expensive. Today Ford Lio Ho sell cars. turns out about 1,200 Cortinas per month as well as 500 Escorts been increasing by between 20 and perhaps a couple of hundred and 25 per cent in the last few alter the fact that Taiwan's turns out about 1,200 Cortinas Granadas.

The engines and some of the parts are locally made but Mr. Raymond Chen, the Peking-born U.S.-naturalised chief executive of the company, says that each industrial city in the south). Car Escort and Cortina built at imports are starting to be per-Chung Li contains an average of \$1,200 to \$1,500 worth of British components. On a rough cal-but not on terms which give culation that would mean that Ford any rause for concern. Ford's operation in Taiwan is Philippines. worth over \$20m per year to Ford came into Taiwan in the British balance of payments. with the figure likely to increase sharply during the next 18 months.

Mr. Chen says that Ford was aware that American "de-Taiwan is measured by a 6,000-despite recognition" of Taiwan was on car order backlog, equivalent to sation.

press on regardless can be at least for the time being, attributed, Mr. Chen says, in the because the scale on which Ford first place to the conviction that Lio Ho operates is simply not Taiwan's political status will large enough to make this eco-The company started by building the "utility" Flera in Taiwan, but soon found that the from that it takes little imaginaton the next five years and probably motor manufacturers, who do export, are losing at least \$2,000 per car—which Ford cannot be a local probably and the state of the st tion to see that the island is a afford to do because it is not a good place in which to make and diversified enterprise able to

> years and may grow faster now that a new freeway has been years of profitable growth ahead completed between Taipei (the capital in the north of the island) and Kaohsiung (a major but not on terms which give · An effective 125 per cent rate

\$25,000 whereas Ford's comparable locally manufactured Granada costs \$12,500. The strength of Ford's market in

the cards when it decided to nearly one third of annual pro-Toyota's departure meant that enter the country in 1972. The duction at current rates. The Taiwan are not packing their Toyota's departure meant that enter the country in 1972. The duction at current rates. The bags as a result of the U.S. its ex-partner, the Taiwanese probability that the Americans backing would be bigger, Mr. would leave had become a Chen says, if Ford dealers had recognition from the Taipei new source of capital and exper-virtual certainty by March this not started turning away some

Mr. Chen rules out the pros-The fact that Ford decided to pect of car exports from Taiwan, remain unchanged for at least nomic. (He claims that Korean diversified enterprise able to treat car exports as a "luxury" domestic market has many of it, or that exports of com-ponents and engines should continue to flourish.

As proof that Ford is not the only motor manufacturer which mitted under the Government's sees future possibilities in Taiimport liberalisation programme wan. Chrysler and Perkins stood to be involved in discussions on a \$70m joint venture of import tax means that an with a sami-governmental enter-Opel Rekord sells in Taiwan at prise which would produce The Chrysler-Perkins trucks. team, quartered in Taipei's best hotel, appears to have been pressing on with discussions despite the "shock" of normali-

SHIPPING REPORT

Dramatic rise in oil tanker freight rates

THE CLOSING MONTHS of for the first time for five years, ing ports, with most cargoes oil tanker capacity had resumed last year witnessed the greatest encouraged one major company bound for the U.S. rise in oil tanker freight rates since rates fell after the Middle East war five years ago. The rates held up well over the first week of the new year and the 1978 trade surplus was rooted market was optimistic about in the need to compensate for prospects in spite of continued uncertainty about oil cargoes

> There was still a queue of over 50 large and very large crude oil tankers waiting for cargoes markets were active. Some, in

from Iran.

Mediterranean. were much more so than had

to consider reletting its idle markets.

dwt vessel for immediate load- rates for vessels. ing for a western destination. Rates for 130,000 dwt to

Japanese charterer paid World- Texaco negotiating for 12. Other oil tanker chartering scale 39 for a 153,000-dwt vessel. months' trading with vessels up Prospects for tanker trading to 150,000 dwt.

n the rest of the months were The rising fortunes of the in the rest of the months were Galbraith Wrightson forecast

was paid for a 30,000-dwt white of capacity remained laid up. There were few requests for oil carrier for trading between charteres of very large and the Mediterranean and Scandiultar-large crude carriers from navia, as charterers responded the Middle East. Worldscale 30 to the deman dfor oil caused by was paid by Social for a 237,000- cold weather by paying high

Time-charter business in most world markets also picked up 150,000 dwt were also high. A over the past weeks, with

said at the end of last week to independent tanker owner were ing oil storage at the start of be favourable. London brokers reported by Intertanko, the this year reached a total of Association International

trading in the last half of 1978. At the smaller end of the All the tonnage had obtained tonnage off Iran on other tanker scale, Worldscale 300 profitable work, but 30m dwt

> Intertanko said that between January 1, 1974, and December 1, 1978, owners scrapped 1,222 tankers carriers, a total of 45m dwt. Total demolition sales last year were expected to reach a new record of 15m dwt, with total fleet reduction of 16m dwt, after conversions and losses, compared with 10m dwt in 1977.

of 7.Sm dwt. Howard Houlder of profitable trading, with indethat there would be a rise in Independent Tanker Owners, in (Chartering said in a report
pendent tanker owners covering new business from Meditertheir operating and capital costs ranean and North African loadThis reported that 20m dwt of 40 vessels involved,

Why come to Britain's largest unit trust group for pensions?

For the Self-Employed

Self-Employed Pension Scheme. This is a single premium scheme consisting of two separate plans – the Guaranteed Plan, which provides a pre-determined amount of pension in return for each contribution, and the Investment Plan which provides a pension based on the investment performance (see opposite) of either the Property or Equity Pension Fund-Contributions to both plans are eligible for tax relief.

Guarantee Plus Retirement Plan. This is a regular premium scheme that provides a guaranteed amount of pension which may be increased by bonuses, depending on investment performance. It is also suitable for employees who are not members of a company pension scheme.

For Controlling Directors

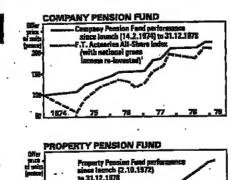
Since the 1973 Finance Act was passed, controlling directors have had far greater flexibility in making their own pension arrangements. Directors may now obtain substantial pension benefits, provide full protection for their dependants and secure significant capital transfer tax savings, all at a low significant capital net cost to their company. Our Executive Pension Scheme, described below, is a particularly effective way of providing all these benefits. The Scheme can be linked to any of the tax-exempt pension funds

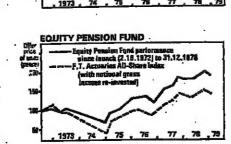
For Key Executives

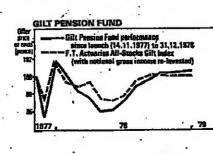
The Executive Pension Scheme is also suitable The Executive rension Scheme is also suitable for companies which have contracted into the State Pension Scheme but wish to provide additional 'topping-up' benefits for key executives or particular groups of employees. The Scheme, which can be linked to any of the funds opposite, takes full advantage of tax relief on company and in high least respectively. individual contributions. An important feature is that the Scheme involves the company in the minimum of administration.

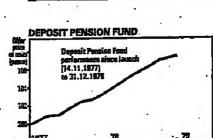
For Pension Fund Trustees

Managed Pension Fund Contract. This is designed as a service for trustees of smaller sized pension funds whose size does not permit them to obtain sufficient investment spread or who find the cost of direct investment management prohibitively high. Through the range of funds opposite, trustees can achieve a degree of spread which is only possible









When providing for your own pension or advising others on pension matters, it will certainly pay you to consider the pension schemes Save & Prosper offer, both for individuals and groups.

Wide investment experience. At Save & Prosper we have acquired considerable investment experience over the past 44 years, becoming Britain's largest unit trust group. From this base we have developed new ways for investing in other types of funds as well as in unit trusts so that investors can achieve more objectives in simple and tax-efficient ways. As a result we are now also a major force in pensions, life assurance and annuities.

At 1st January 1979 Save & Prosper Group managed £923 million for some 700,000 investors.

Carefully designed pension schemes. The range of Save & Prosper pension contracts is a good example of our technical expertise in developing plans to meet investors' needs. We have been able to select the best features of existing contracts on offer, refine them and often incorporate our own innovations. The contracts are structured so that companies and members are both involved in the minimum of administration. In this way we believe we have pension schemes which are tailored to meet market needs with a high degree of precision and which offer good value for money.

Maximum tax relief. All our contracts are designed to take maximum advantage of all available tax relief.

Further information. For further details please consult your professional adviser or one of our branch offices throughout the country, or telephone our Customer Services Department on 01-554 8899. We have branches in Birmingham, Brentford, Bristol, Croydon, Edinburgh, Glasgow, Ilford, Leeds,

Manchester, Newcastle-upon-Tyne, Nottingham, Plymouth and Southampton.



SAVE & PROSPER GROUP

Cement price **rise of 7.4%** is expected

application by Rugby Portland Cement to the Price Commission for an overall weighted average price rise of 10.9 per

The Price Commission is to investigate the Rugby Portland proposal on Wednesday.

Under the Price Commission rulings, Rugby Portland Cement is expected to ask for a 7.4 prices. If all the regulations, under which the Commission operates, are carried out a 7.4 per cent interim increase will be introduced next Monday.

will apply also to Associated gation by April 10.

INTERIM cement Portland Cement, which has a prices of 7.4 per cent by the 56 per cent share of the UK British industry may be cement market, with Rugby approved next Monday after an Portland holding 16 per cent.

The Price Commission wants a fundamental change in the cement industry's pricing structure and in June It said prices, in the long run, should be geared to reflect more accurately the different manufactur-ing and distribution costs.

In January last year, the cement makers - who are allowed to operate a pricing agreement — asked for a 10 per cent rise in prices and an interim increase of 7.09 per cent was allowed by the Price Commission.

The Price Commission says on this recent claim for a 10.9 The industry has a uniform per cent, price increase that it pricing system and the increase expects to complete its investi-

Lord Garmoyle joins Warburg

LORD GARMOYLE, a key figure U.S. sale of British Petroleum involved in the Government's sale of part of its British Petroleum stake to U.S. citizens, is to join merchant bankers S. G. Warburg next month as an

merchant bank involved in the shares.

shares in June, 1977. About 13.4m were sold in the U.S. representing a 3.4 per cent stake in the group. At the same time a 14.5 per cent stake was sold in the UK, leaving the Govern-Warburg was the leading UK ment with 51 per cent of the BP

CONTRACTS AND TENDERS

Tender Announcement for **Nominated Sub-Contracts**

The Government of the State of Oater will shortly invite bids for the Nominated Sub-Contracts for the University of Quar which is situated approximately 6 km north of Dahe. The University comprises approximately 73,000, square metres of low rise academic buildings of high quality located on a 14 nectare site.

- The Sub-Contracts will comprise:
- 1. Engineering Systems A. Mechanical.
- 2. Architectural Finishes
- A. Joinery and Associated Works.

 B. Applied Finishes, Suspended Califings and Decorations.
- 3. Equipment A. Movable (jurniture)
- 4. Landscaping Applications to participate should be sent as soon as possible, but not later than 24th January, 1979, to:
 - The Technical Adviser to His Highness the Amir
 - The Amir's Office, P O. Box 923. Doha, Gatar.
- Copy to Ove Arup and Partners, 13, Pitzroy Street, London, VVIP 68Q.
- The application must be occompanied by: 1. List of major projects recently completed, quoting value and date of completion.
- List of current projects quoting value and percentage completion; with contract completion date.
- 3. Complete financial statement (audited) for the past five

Interested firms should have the turnover shown in the table below for each trade and documents will be available at the Amir's Office for prequalified bidders at the prices listed. Tumavai OP

| Sul | b-Contract | Tumover QK | Price QR |
|-----|--|-----------------------------|-----------------|
| 1. | Engineering Systems A Machanical B Electrical | 160,000,000 . 90,000,000 | 10,000 6,500 |
| 2. | Architectural Finishes A. Joinery and Associated Works | 90,000,000 | 5,500 |
| | B. Applied Finishes Suspended Ceilings and Decorations | 45,000,000 | 3,000 |
| 3, | Equipment | | |
| | A. Movable (lurniture) B Fixed (littings) | 75,000,000 95,000,000 | 4.500 6.000 |
| 4. | Landscaping | | |
| | | 45,000,000 | 3.000 |

Firms must state in their replies the Sub-Contract in which they are interested. Full details of incorporation of company, clarification of relationship of any proposed joint venture and name of local agent must be supplied. Firms not supplying any of this information may be excluded from participating. The Main Contract period will be approximately 40 months. with an assumed commencement date of March 1979. It is the intention to invite bids from a select list of pre-qualified bidders at dates which are appropriate for letting sub-contracts for each of the construction elements listed above. Tenders will be valid for 90 days after submission. Tender and performance bonds will be required. All sub-contracts will be let on a fixed-price basis.

THE HASHEMITE KINGDOM OF JORDAN
JORDAN ELECTRICITY AUTHORITY
SOUTH JORDAN TRANSMISSION DEVELOPMENT, STAGE 1

SOUTH JORDAN TRANSMISSION DEVELOPMENT, STAGE I Transcription for the design, manufacture, lossing, delivery, errection, manufacture, and ancillary equipment for five new substations and ercensions at two existing substations including all necessary substation civil works. The main plant requirements are briefly as follows.

27 bays of outdoor 132kV switchgear
30 panels of im.007 32kV switchgear
30 panels of im.007 32kV switchgear
31 panels of im.007 32kV switchgear
32 panels of im.007 32kV switchgear
33 panels of im.007 32kV switchgear
34 panels of in.007 32kV switchgear
35 panels of in.007 32kV switchgear
36 panels of in.007 32kV switchgear
37 36kVay braitings will be located in Southern Jordan at Qatrana, Karak were Station. El Hasa, Ghor Sah and Rashadvia, The exiting substations at Amman South and Bayader. Teaders will only be considered for the plant with cled works. The cost of one set three tender documents will be 80 Jordan Dinars or \$135 sterling.

Tender No 28178 (2041/02) for transformers and associated equipment follows:

or \$100 storting.

Tenger No. 27 78 (4041/3) for 1326V double throut overhead transmission lines equipped with 400mm nominal aluminium area conductor. Lines will be between the following places:

8-yader-Amman South—11 kms
Amman South—03t-ama—72 kms
Qatrana-Karak-Obor Sab—54 kms
Qatrana-Karak-Obor Sab—54 kms
Qatrana-Karak-Obor Sab—54 kms

-3 arms -25 kms -26 of three tender documents will be 50 Jordan Dinars to done set of three tender documents will be \$0 Jordan Dinars is serving.

For will be required to provide evidence of substantial experience similar nature and magnitude. The LB R D, the a loan towards the land of the la

The Hashemite Kingdom of Jordan. Preece, Cardew & Rider,

Applications should quote relevant tender numbers.

Applications should quote relevant tender numbers.

Tender documents will be available from the Jordan Electricity Authority, and Riecce. Cardew & Rider at the above addresses from 24th January, 1979.

Tenders are to be retired to the Jordan Electricity Authority Office before note on Monday, 30th April, 1979.

The Jordan Electricity Authority does not bind viself to accept the lawest or any tender, nor will it be responsible for any costs incurred by tenderers in preparing their render.

Ireland urges new initiative on Ulster

BY STEWART DALBY

IRELAND'S Foreign Minister has urged Britain to launch a new political initiative almed at breaking the stalcmate in Northern Ireland. The call from Mr. Michael O'Kennedy is regarded as a new step in Irish Government

policy. Mr. O'Kennedy said: " Peace and justice can only be given full and lasting expression when there is a political pro-cess through which it can be implemented. For that reason we cannot afford to allow another year to go by without filling the political vacuum

BY ELINOR GOODMAN, LOBBY STAFF

likely to give the Tories a boost manifesto. this week in its campaign to They wi

brand Labour as a party domin-

ated by extremists and divided

in its own ranks. New proposals

for dealing with two of the issues on which Labour is pro-

bably most vulnerable to Con-

servative attacks-defence and

immigration—are to be dis-cussed by different committees

charged with helping to draw

up the party's next election

has produced new plans for

cutting defence expenditure by

proposals also include a ban on

all new British investment in

The international department

25 per cent over a period of Commonwealth years and so bringing it in line would be given

basis for the international com- right of entry.

that has existed in relation to Northern Ireland, He recalled the New Year

message from Mr. James Callaghan, the British Prime Minister, that his government would give active support to the efforts of all peace-loving people in Northern Ireland would continue to

bring violence to an end. Mr. O'Kennedy's speech is the first important pronounce-ment on Northern Ireland by a member of the Dublin Government for almost a year. Last February Mr. Jack Lynch, the Prime Minister.

They will be discussed by the

committee tomorrow and, if

approved, would then have to

the National Executive Com-

Meanwhile, the Home Policy

Committee, under the chairman-ship of Mr. Anthony Wedgwood Benn which shares the job of

drawing up policy for the NEC.

is to be presented today with plans for a total overhaul of the

Under these proposals all ommonwealth immigrants

The idea is that Australians

should be made dependent on a Pakistan. Anybody who could and the way it is dominated by restoration of human rights, satisfy new citizenship provi- extremists who put national

However, suggestions that a

link with the Japanese might

bring benefits for BL have in

the past been given a poor reception by Mr. Michael

Edwardes, the BL chairman.

units a year can be viable.

survive in both management

would be given equal treatment

immigration laws.

where they came from.

Bow Group calls for venture

between BL and Japanese

to boost Tory popularity

THE LABOUR PARTY looks mittee's contribution to the next

with that of its allies. The regardless of their colour or

South Africa and a suggestion and Canadians wanting to come

that any further loans to Latin to Britain would be equal with

American countries like Chile those coming from India or

They have been drawn up as a sions would have an automatic

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

A JOINT venture between BL to the paper by Mr. K. Moritomo,

(formerly British Leyland) and commercial minister at the

one of the Japanese car manu- Japanese Embassy in London.

facturers should be encouraged. stated that the proposal for a

according to a paper published careful study.

called on Britain to give some indication of a definite date for British withdrawal.

Mr. Lynch has made only one important speech on Northern Ireland since then, which concentrated on condemning the violent tactics of

Observers point out that Mr. Kennedy had studiously avoided the question of British troop withdrawal and concentrated instead on the development of talks between Roman Catholics and Protes-tants and some kind of North-South dialogue.

manifesto has to be

chances of the latest proposals

being included in the final

document in anything like their

existing form are slim. Never-

theless, the Prime Minister can-

not afford to ignore them totally although they run counter to present Government

sions within the Labour Party

Adverse public opinion com-

the 1978 reorganisation, is pro-

ducing a situation where

of BL in its present from is

Mr. Cameron suggested that

the encouragement of large-

imports to the UK, "The suc-

political

rationalisation is a

probably inevitable.

priorities.

Only Britain, which runs Northern Ireland by direct rule, could initiate this, he

"Despite the continuing suffering and violence the climate for reconciliation has never been more favourable.

"The historic election of David Cooke of the Alliance Party as Lord Mayor of Belfast and the equally historic election of Thomas Craig of the Unionist Party as Mayor of Derry, supported by the SDLP, testify to the capacity of political represen-

tatives to show generosity and tolerance in the interests of the community they serve."
The Irish Government wanted to develop structures and policies which best served the interests of all Irish

people. "We would wish to avail ourselves of every opportunity for consultation with a wide range of political opinion in the North as well as in the South. We have also estab-

lished special priorities for cross-border economic projects government

Economy 'should just Labour Party proposals likely scrape by this year'

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

THE ECONOMY should manage in the retail price index is pro-to scrape by in the next 12 jected at 11 per cent in the year months with a slight accelera- to the fourth quarter of this Research by Transport House last year showed in some areas the Tories had benefited contion of inflation, moderate slowing in economic expansion, siderably from Mrs. Thatcher's modest current-account surplus, and a small fall in the exchange call for tougher immigration adopted by a full meeting of controls and Ministers may be rate, say the stockbrokers Phillips and Drew. alarmed at the issue being raised again in an election year.

In their monthly economic analysis published today the agreed jointly between the Cabinet and the NEC and the brokers take the same broadly neutral view of the prospects as taken in most recent City forecasts.

> There is general agreement on likely development of the economy, with a slowing of the growth rate but no significant deterioration in either rate of price inflation or in the trade

More importantly, they may be exploited by the Conserva-tives as further evidence of what Phillips and Drew says that these forecasts depend on moderation on the pay front, and they will portray as the divi-"in this area the portents are admittedly disturbing, with much resting on public-sector hargaining attitudes in the next defence low on their list of

average earnings might rise by between 10 and 12 per cent and,

jected at 11 per cent in the year to the fourth quarter of this year, against 8 per cent at On this basis, and given the

likelihood of no net fiscal stimulus in the spring Budget, real disposable incomes were likely to rise by only up to per cent to the end of this year, after a 7 per cent rise last year.
This slowing in growth of real facomes would be reflected in parallel slackening in expansion rate of real consumer spending

and of total output. The growth rate of consumers' expenditure is projected to decline from 6.4 per cent in the year to the fourth quarter of last year to 1.4 per cent in the same period of this year. On a calendar-year comparison

growth is projected to drop from 5.8 to 3.0 per cent. The rate of expansion of real gross domestic product is forecast to decline from 3.2 per cent in 1978 to 2.5 per cent this year.

With pace of economic expan-In the present pay round sion slowing, and about £12bn werage earnings might rise by more from North Sea oil, the current account should improve, as a result, retail price inflation with an estimated surplus of return to a double-figure rate in between £500m and £1bn. This the second half of this year, compares with an estimated zero.

The 12-month rate of increase balance for last year as a whole.

Retail inflation rate likely to hold steady

THE ANNUAL RATE of retail The wholesale price indices bined with the hiving-off of the volume car divisions, under

The retail price index for the month to mid-December will be boosted by higher petrol prices. the recent rise in mortgage rotes, on increase in the television licence fees and in the price of bread and eggs.

However, none of this should result in any significant change in the 12-month rate, which was living standards, which reached 8.1 per cent in November and an all-time peak in the second has been about 8 per cent for eight months running. Other indicators to be released

Dritum's relicte industry-is Although such a strategy and labour.

Ould be a radical departure "The company is surviving Japanese investment the Key ing and the gross domestic subsidies, to survival." Bow Publications, product,

price inflation is likely to have published today and giving pro-remained within the recent visional figures for December. range of about 8 per cent dast are likely to show that month, which should be indicated by new official figures to be published later this week.

The retail price index for the

tory gate. Will show whether companies have continued to absorb wage costs, is suggested by last month's figures.

Wednesday's gross domestic product figures coverithe third quarter and should confirm that an all-time peak in the second

this week cover wholesale trade is published to-morrow in a few days.

prices, retail sales, bank lend. The provisional figure showed. Thus when heavy selling ing and the gross domestic the index at 109, almost iden emerged as the Hong Kong martical with the September and the high levels of the late

Access offers cards to stores

BY MICHAEL LAFFERTY

THE ACCESS credit card operation is to offer credit cards for individual businesses. Barclaycard decided last year to operate pilot schemes for com-

Both concerns predict that this year will see a boom in new card schemes

Company credit eards are issued in the name of the store group but managed and generally financed by the credit card concern. They would probably bear interest at the same rate as general credit cards issued by Barclaycard or Access.

The management fee for the service is related to the amount.

business generated. Albert Armstrong, finance directors of Dunns, the men's wear store chain, which is using a Barclaycard pilot scheme, says that the charge to his group has been very attractive.

The announcement of the Barclaycard move has led to a flood of inquiries to both credit. card companies. Top of the listcome all the large retail store groups, but interest is also, being expressed by companies such as motor manufacturers.

Although Access has decided in principle to issue company credit cards, its first scheme is unlikely to be announced for a

April. Barclaycard says that it has been pleased with the response to its three pilot schemes: for Dunns; Michael Barrie, another men's wear chain; and Snob, a fashion business.

few months, possibly not until

Stockbroker's writ against S. M. Chan

By Andrew Taylor :: W. I. CARR, a London stock-

broker, has issued a £200,000 writ against S. M. Chan (1973). the Hong Kong brokerage that colapsed at the end of last year. Several other London brokers are also thought to be considering writs for smaller sums against Chan, -

Mr. Roderick MacLeod, leading senior partner at Carr. said yesterday that the broking firm had made full provision for losses against its arbitrage busi-

The collapse of that business had resulted in a revision of Carr's rules for arbitrage deat-The index for output prices ings. Mr. MacLeod said that charged by industry at the fact the group would not again. become so exposed to business generated by a single broker. The Chan situation highlighted the difficulties of dealing

between London and the volatile Hong Kong market. Delivery of shares bought in London for Hong Kong customers can sometimes take quarter, continued to rise.

The final index of the Hong Kong trading rules.

November volume of retail delivery should take place with

ket deteriorated at the end of October figures and down from last year, Chan found himself seriously uncovered and critical losses resulted:

Gearing up for the micro-chip

He has said that BL has no scale inward investment from

intention of being taken over Japan would provide one way

and that a well-run car com- of casing the tensions caused

pany making around 800,000 by the success of Japanese car

The Bow Group paper cessful implementation of such

suggested that constant re- a strategy in the UK might also

organisation at BL appeared to bring about the regeneration of

have destroyed the will to Britain's motor industry."

THE IMPACT of new tech nology on Britain will be felt equally in the Civil Service as in the private sector. This was recognised by Lord Peart, the Lord Privy Seal, in a speech Society last week. Lord Peart said that before

by the Bow Group today,

The author, Mr. Donald

Cameron, assistant political officer of the Bow Group, the

independent Conservative study

group, said this would "capital-

ise on the specialist car

strengths of BL and the volume

car strengths of the Japanese."

venture would be "component

orders for British companies,

cash flow for BL and halance

would be a radical departure

payment advantages for

for both countries, a forward with taxpayers'

He considered that such a

office workers will use computer terminals or self-contained microcomputers much as such a complicated social they now use calculators. processing systems followed by systems capable of

long increasing numbers of

replacing paper handling and filing will have a tremendous impact on the services administrative work. Rapid access to computerheld data will become common-

place for many Government services. There is already a pilot project in operation in North London to match unemployed people to job vacancies and word processing equipment is on trial at the Education Department office in Darlington. The Civil Service is already gearing up to deal with the micro-chip revolution. Eighteen months ago, the Central Computer Agency, the division of the Civil Service responsible for promopting computing in the Service, Set up a micro-com-puter workshop to study and evaluate possible uses for microin government

departments. Change is being forced by the necessity to perform complex statistical and analytical functions quickly and cheaply. Computer technology has already had a major impact not only on the organisation of covernment but also on the legislative pro-

In the next decade, the UK's

Dependent

NEWS ANALYSIS

made to the British Computer TECHNOLOGY IN THE CIVIL SERVICE BY PAUL TAYLOR

> security benefits system. At the core of most of the Government's major administrative operations there is now a computer. From the Transport Department's Swansca vehicle and driver record computer to the Home Office's police national computer the provision of statis the Civil Service Department in tics is now largely dependent on April.

number of large lations in Government has doubled since 1970 with about 200 in use today. It is now the largest single computer user in the UK.

Behind the rapid expansion of computer use in the Civil and organisation. Service the agency and in Mr. Mr. Gerald Water Charles Morris, Civil Service Minister. it has a strong Mr. Morris said recently that

the use of computers provides more efficient administration and enables departments to give hetter service to the public. He said: "Many of the Government's tasks could not be undertaken at all without computers. Others could only be done more slowly, less accur-ately and with far larger The review numbers of staff."

He believes there will be a continuing need to expand the use of computers and in parti- changes together with further cular to exploit new develop- increases in the power of proments such as distributed cossors and storage devices and computing, which will put reductions in their size and cheap and sophisticated computer power into local offices. The report predicted that

from about £30m in 1972-73 to nearly £70m in 1978-79, in addition to the £70m-£80m spent on staff and running costs.

However, the rapid expansion of computing in the Civil Service has not been without its problems - perhaps best identified in a report published by The report, called A Longer

Term Review of Administrative administrative computer instal- Computing in Central Government, looked at the role of administrative computing, and put forward a series of proposals to deal with identified problems such as the staffing of departmental installations, financing

Mr. Gerald Watson was closely involved with the review and has recently been appointed as the agency's director. He believes that the introduc-

tion of micro-electronics will have a big effect on the Civil Service but that the pace of change may be somewhat slower than is often supposed. It may be five or ten years before the full impact of micro-electronics seen within Government The review clearly identified

the introduction of powerful mini and micro-computers as the most dramatic

multiply in headquarters and local offices. However, despite the expected increase in the use of freestanding microcomputers. large complex systems will continue to have a role to play. The agency buys most of its hardware from ICL under the Government's procurement policy and plans to replace existing equipment with the new ICL 2900 series in the 1980s. Many of the problems identified by the report are now being tackled by Government depart-

Funding

There is a move away from funding new computer installations by the agency on behalf of departments towards direct departmental funding and a greater emphasis is being placed on educating senior department managers on the need for and

ments and the computer agency.

uses of computing. However, the main problem identified by the reportpay and staffing—remains rela-tively intractable unless the Government is willing to devote substantial additional funds to ensure that the agency and departments can retain computer staffs against the pressure

The report said "we will be wasting our time if we cannot offer our computer staff career opportunities and rates of pay comensurate with those of other employees.

Mr. Watson accepts the prob-

other departments have lost experienced computer staff to private industry and is at present short of them largely because of the better salaries and fringe benefits in the private

In the next decade, the UK's Pay-As-You-Earn lax system is cheap and sophisticated complikely to be fully computerised puter power into local offices. The report predicted that with this promein. Expenditure on new or visual display units and "intellities being paid to the present pay gent" terminals, whether linked being paid to the present pay and the level of settleputer installations for Govern- to a large remote computer or review and the level of settleor whether Britain could run ment departments has grown part of a local system will ment in April.

FIGHT BACK AGAINST CANCER

It is good to remember that most people live their lives untouched by any form of cancer.

But as all too many are aware, cancer is something that casts its shadow far beyond those it directly affects. That is why so many people think it right to help the urgent work of the Imperial Cancer Research Fund.



IMPERIAL **CANCER RESEARCH** FUND

One of the ways you can help us NOW.

au sending the sum of t. as a donation to the scientific ork of the Imperial Cancer Research Fund I duidono require a recept (please delete appropriately). *As you are sure to know a donation made by means of a Covenant allows us to reclaim tax paid, thus increasing our resources at no additional cost to the donor We have up to-date totalls of how to make a Covenant arrangement - if you would like them sent, please put a tick in this box.

The Appeals Secretary, Room 177/15 imperial Cancer Research Fund PO. Sox 123

Lincoin's Intrificids London, WC2A 3PX,

A some complete

Druker against

NOW NO

reviews future of Welsh mines THE FUTURE of the South against the area board's Wales coal industry, which lost f30m last year and is expected to lose at least as, much this year, is to be debated tomorrow by a sub-committee of the Coal Industry. Tripartitle group, chaired by Mr. Authony Wedgwood Benn, Emergy Secretary, is Cardiff.

At a preliminary meeting of the full board, and is

Benn committee

At a preliminary meeting of the sub-committee last month, a National Coal Board paper, supported by the National Union of Mineworkers, argued strongly for increased Government investment over the next five years to put the area on a firm financial base.

It is understood that the Treasury, formally represented on the sub-committee by Mr. Joel Barnett: Chief Secretary, was at least initially reluctant to approve a £17m grant to the Board last October to help it to subsidise the price of coal sold to power stations.

Unavailable:

the Central Rolley Review Staff (the Think Tank?) is also a member, thus ensuring that the Cabinet Office keeps in touch with developments

In its paper, the hoard relied heavily on arguments that coals from the Welsh field were often virtually, unavailable élsewhere in the UK and that they were crucial to the domestic and

smokeless fuel markets.

The paper said that the cost of importing the coals required . if the coalfield were run down

Although the union supports station and this was in addithe Coal Board's call for in tion in the £35m over five years creased investment, the two announced in 1977. disagree sharply over a pro- "A new shaft is to be sunk at cramme of closure that Mr. Castlehill Colliery, which is Philip Weekes, the South part of the Longanust complex, Wales area director, believes and a new mine to join the essential if the field is to be complex is to be driven from made profitable by the early Kinneil Colliery at Borness.

closure is Deep Duffryn, in the Cymon Valley. The board says is simed at extracting a seserve that it is approaching of 100m tonnes of coal from countries and loses £7.50 a under the Forth, a forme of coal produced.

"The Government is guaran-

Miners has refused to agree to industry in Britain. Scotland Deep Duffryn's closure and is will get its fair share of that appealing to the full board development."

area's decision, particularly as Mr. Weekes is a part-time mem-ber of the full board, and is preparing to take its case to the

Energy Secretary.
Mr.: Emlyn Williams, president of the Welsh miners, said at the weekend: "It's rubbish to say that there's no more coal left there. The valley's full of coal. If you chose that pit, the valley will die."

Mr. Benn does not enjoy

being placed in the position of arbitrator over pit closures, a constant source of friction between the board and the

Last year he proposed scheme whereby the union and board would decide jointly on pits to be closed. However, the Sir Kenneth Berrill, head of responsibility of deciding on pit he Central Policy Review Staff closures would create possible breaches between its national and regional levels. It has not taken up the invitation.

• The Government is committed to maintaining and expanding the coal industry in Scotland, Mr. Alex Eadle, Energy Minister with special responsibility for coal mining, and a former miner, said yester-

Project

The industry in Scotland had would be much higher than the present subsidies needed to keep it going. For coking coal alone, the paper slaimed, substitutes would cost \$40m a year.

The three much bigher than the past year, he said. "Just last month," the Government approved £1.5m to maintain the level of coal would cost \$40m a year.

The three much bigher than the past year, he said. "Just last month," the Government approved £1.5m to maintain the level of coal would be much bigher than the past year, he said. "Just last month," the government approved £1.5m to maintain the level of coal would be much bigher than the past year, he said. "Just last month," the government approved £1.5m to maintain the level of coal would be much bigher than the past year, he said. "Just last month," the government approved £1.5m to maintain the level of coal would cost £40m a year.

1980s, which remains his aim. These operations are to cost The first pit selected by the £33m, while another £37m is South Wales Coal Board for planned for the Munktunhallplanned for the Monktonhall-Musselburgh Bay project, which The Government is guaran The Welsh National Union of teeing a long life for the coa

Private steel sector may switch sources

BY ROY-HODSON

FAR REACHING changes in the The British Steel Corporation private sector of British steel is now completing two direct aking, involving the mini- reduction ore plants at Hunter

Mini-mill operators are said reappraised. to be looking beyond the acrep. If the plants are put into pro-steel market for future feed duction later this year, or early stock for their electric furnaces. next year, some of their pro-Suggested alternatives include duction might be made available

scheme to build a plant on the an alternative to scrap steel Tyne, for the direct reduction upon the British market would of imported iron ere, was help hold down scrap steel screeped two years ago because prices of the cutback in world steel demand.

Argul Private minimals in Britain. The

steel demand improves. The journal says that while there is much scrap steel avail-able it is partly because of the inability of the British Steel Corporation to take up the quantities. Thus, any increase considered by the mini-mill in demand for steel is likely to operators as they again consider raise scrap prices stready whether to invest in a private back at 1976 levels of about £50, sector plant for directly reduca tonne and put the minimils

making, involving the minimate of the clyde with 800,000 materials sources, are forecast tonies annual capacity. Plans in the latest issue of the to keep them in mothballs joudnal Metallurgist.

granulated blast furnace iron to the private sector steel com-and pre-reduced iron. panies. In any event the A private sector steel industry appearance of large tounages of

Arguments The 530 member companies rivate minimus. In Strain. The 580 member companies including the new 800,000 tonnes of the British Scrap Federation a year capacity Alpha works in which have more than £150m South Wales, are contributing invested in scrap processing about 5 per cent of Britain's facilities, have told the Governliquid steel output. They could ment that the price of scrap easily double their output if steel is likely to continue to be directly dependent upon demand. Also there is a ceiling to the amount of scrap which could be recovered during a

Those arguments are being ing iron ore or obtain feedstock

Assemblies 'catching-up exercise in democracy'

BY ROBIN-REEVES, WELSH CORRESPONDENT

ASSEMBLIES for Wales and ing its central government Scotland are a catching up exer Spain, which it was hoped cise in democracy and in con-would soon also be a member of formity with the broad frend of the European Community, now government and administration also had a constitution providin most other democratic ing for regional assemblies in countries, Dr. David Owen, the 16 regions. Foreign Secretary, said at the On the other hand, in Britain

weekend. central government had grown
Returning to the Land of his almost unchecked. In 1900,
Fathers to address a "Wales for there had been 50,000 Civil Serthe Assembly" campaign rally vants. Today, there were 570,000 in Llandrindod Wells, Dr. Owen in organisational structures ever

pointed out that, among the more dominated by London.
EEC member States, Britain The decentralisation of these
had the most centralised form areas of decision-making to
of government, apart from elected Assemblies for Wales
France. It contrasted unfavourably addition to democratic governwith Germany's Federal struc- ment, a major step, but a catchture which had been strongly ing-up exercise in democracy." influenced by the UK when it. It fitted in with an interwas an occupying power national climate in favour of the immediately after the War. Italy citizen's concern to win back enjoyed a successful form of more control over his destiny regional government which had and readjust the balance acted as a stabilising factor in between bureaucracy and relation to the problems affect democracy.

Trailer men top profit league

YORK TRAILERS, which makes truck trailers, tops what is claimed to be the first "profit-ability league" for the engineering industry.

The magazine Engineering Today, which compiled the list, chose to measure performance by net return on paid-up capital. Only public companies are included because of difficulties in obtaining details of private concerns' finances.

York makes a 55 per cent return, "a staggering performance in a market which is chomically oversupplied," according to the compilers.

The group has averaged a compound growth in net earnings of over 20 per cent in the past five years. The electronics group Racal is reckoned to have the best all-

round record with angual earnings growth of nearly 60 per cent in the five years, and 40 per cent return on capital. Companies need not be in obvious growth industries to perform well. Midland Indusries, for example, had annual earnings growth of 69.1 per cent and return on capital of 25 per cent in "the unglamorous business of drop-forging, tool-

No more than 5% without output deal, railmen told

RAIL UNIONS were given a have submitted claims for sub-culties from the separate pro- Union of Railwaymen has clear indication at the week-end stantial rises, not to agree deals ductivity claim by ASLEF, the warned that if there is any extra by Sir Peter Parker, chairman below the general level of train-drivers' union. The union's across-the-board payments for settlements in private industry. executive meets today to discuss train drivers, it too would be no more than 5 per cent on At the same time, it has the possibility of sanctioning seeking further payments for its offer for the next pay round taken almost a year of nego-industrial action if its claim is members. be no more than 5 per cent on offer for the next pay round unless it was attached to higher to agree a 12-month productivity to agre

per cent must be achieved by a That deal has still to be productivity deal acceptable to approved by the Department of the Government. But Sir Peter Employment.
stressed that money was available to do this, providing performance, it will provide co-operation with the unions extra payments of about £2 a

week. A deal giving similar.

The possibility of severe difficulties for British Rail pay
likely to ensure that wage
emphasised by the determination of the rail unions, which

week. A deal giving similar.

Region routes are threatening a
24-hour strike from midnight
tomorrow in support of the
up with the private sector.

British Rail still faces diffiBritish Rail is that the National

expected to follow last night.

A DISPUTE has brokne out offshore construction and hookbetween 300 offshore construc- up agreement, arose on the tion workers and contractors Brent C, and men employed on employing the men on three hook-up work by the Wimpey, Shell Brent platforms. Brown and Root joint venture, Men aboard the Brent C and were flown to Sumburgh on Brent B platforms have already Saturday.

been flown ashore and those Then men employed by working on the Brent A were P and W Offshore Services on cern the renewal of the current stopped work in sympathy and becomes lengthy,

Shell Brent platforms hit by dispute Offshore Services workers on

The British Rail union work-

ing party looking at the claim,

which is for separate cash pay-

ments related to what the

drivers say is higher productivity since 1974, meets

Drivers on some Southern

tomorrow.

the Brent A. The Brent C installed on the oilfield in June is the fourth platform to be placed on the Shell-Esso complex and expected to be in production by the third quarter of this year, expected to follow last night. the Brent B. carrying out although that programme will The dispute, thought to con- post installation modifications, now be affected if the dispute

that the dispute should not affect production on the Brent A and B because the men involved were construction workers adding additional facili-

ties and were not involved in

Sir Peter, speaking on the BBC 2 programme On The Record said British Rail had

budgeted for pay rises of 5 per

cent and indicated that anything above this, unrelated to higher

productivity, would lead to fare increases. Rail fares were raised

yesterday by 9 per cent.

The railways, in general said
Sir Peter could look forward to

pay scale could put British Rail "in trouble" again.

Drivers on some Support of the Suppo

production. No comment was available yesterday from any of the con-

Government staff pay warning

By Our Labour Staff

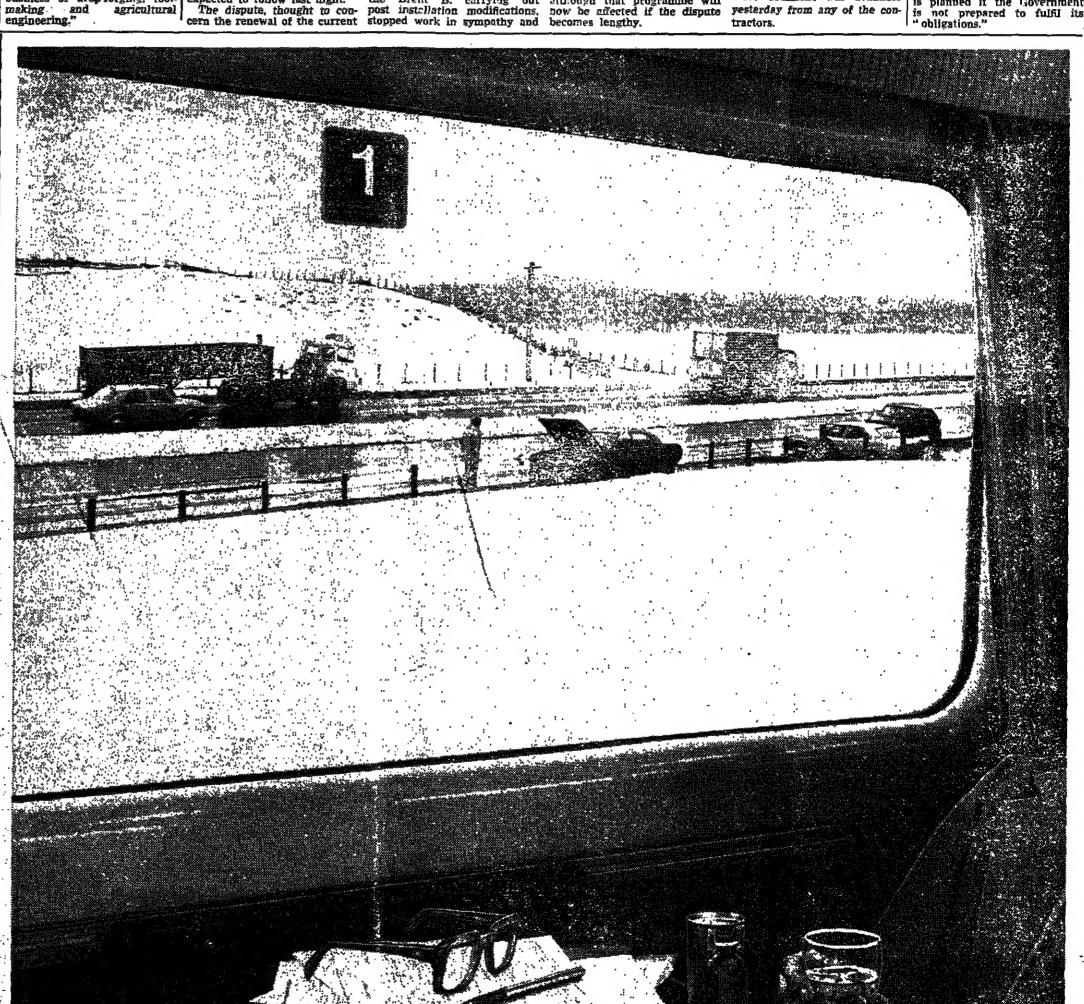
MR. WILLIAM McCALL general secretary of the Insti-tution of Professional Civil Servants yesterday attacked other union officials for taking a militant attitude on the findings of an independent pay comparability study for the Civil Service before the findings were fully known.

In what appears to be reference to the Society of Civil and Public Servants, Mr. McCall suggests that premature publicity on the findings of the Pay Research Unit has done harm to the cause of the Civil

Service unions. The society has been holding regional meetines at which members have been told by officials that the Government could no longer plead ignorance to the pay differentials that have grown up between the Civil Service and private

industry. The findings of the unit, which is not empowered to make recommendations on pay levels. are still at a tentative stage but might be faced with demands of up to 30 per cent, and perhaps more for some groups of civil servants.

Mr. McCall, writing in his union journal, says all the infor-mation from the unit should be analysed before industrial action is planned if the Government s not prepared to fulfil its obligations."



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when the weather is fine. When travel conditions are doubtful, Inter-City is the best way.

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your-way airport because of the weather. And next time you hear someone talk about Motorway Madness, remember it doesn't just mean the stupid things other

people do on motorways. It could be the decision to take the motorway in the first place. When it's the last



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Building and Givil Engineering

Laing gets jobs worth over £6m

FOLLOWING THE construction of three new gaterooms on Pier 6 to serve wide-bodied aircraft at London Heathrow, new furbishment of the existing moving walkways are to be in- loading bridges. New toilets Stween the gaterooms and Ter- level on the pier.
inal 3. Pier 6 is to be widened to minal 3.

The contract is worth more then £3m and has been awarded to be completed by June, 1980, in the area beneath the pier. to be phased within normal operations. John Laing Construction.

the gaterooms measures 410 sq metres and 220 metres length of the pier, promises to enhance the faciliwith precast concrete floor ties for long-distance passengers units, lightweight concrete roof Viviendas Sta Barbera and will using aircraft on three adjoin-

of a new telescopic apron-drive jetty for each gateroom and reimprove access are being provided at walkway

> accommodate two new pairs of passenger walkways. Industrial accommodation measuring 1,100

and wall units, and heavy result in accommodation for up single-glazed windows, all with to 900 people from military

Work includes the provision heating, ventilation and cooling. families in 198 dwellings.

If a new telescopic apron-drive Patient Airports cover that the The development has already British Airports says that the site will be screened during construction in order to reduce

inconvenience to passengers. Norman Royce, Hurley and Stewart, is the architect and consulting engineers are Cyril Blumfield and Partners, and G. H. Buckle and Partners.

Spanish member company, Specification for the new Sa.6m contract to build two structure is steel frame on blocks of flats at Valladolid, 120 miles north west of Wadrid miles north west of Madrid.

started and involves the con struction of two adjoining blocks of flats, one of 11 storeys and a nine-storey block and basement car parking.

Buildings are to have re-inforced concrete frames with curtain wal and facing brickbrickwork internal partitions. Flors will be of beams and hollow pot in one block, concrete reticular in the other. Also included in the contract is the installation of 12 lifts,

fitted kitchens, beating, ventilation and landscaping. Architect for the project is

ICI Organics Division at Huddersfield, meant the company faced excessive heat problems due to the building's facing south west. Problems caused by solar gain suggested costly air conditioning, now obviated by these automatically-controlled external blinds, installed by Street and Collins of Bradford. The scheme utilises hardware, motors and controls from Solar

A change in use of a 25 year old office block,

Protection Equipment, Station Road, Alresford, Hauts (096 273 3014). Ten blind arms, each projecting 2.5 metres, are powered by SPE type R115 tubular motors linked through motor relays. All components, including planetary gearbox and limit switches are mounted in a standard steel tube. Blinds are controlled automatically by the company's combined windguard and sun-guard unit actuated by a light cell and

Call for pumps as waters rise

THE EMERGENCY services of engineers Binnie and Partners, switch, carrying handle and Sykes Pumps have been working of Westminster, London. cable wind and, because the Sykes Pumps have been working of Westminster, London.
round the clock coping with The Government of Pe demands for pumps and pump-ing equipment from public authorities, industry, clubs and 36 expatriate engineers and other private users in many parts of the country following and London offices over the other private users in many parts of the country following

the recent widespread flooding. One of the busiest depots was at Castleford where practically every available unit wsa either sold or despatched on hire in less than two days after floods

in Yorkshire. At Ferrybridge Power Station several Univac pumps were put to use as the rising River Aire flooded cable tunnels and pipe ducts. Two 8-inch electro submersibles were rushed to a large glassworks in York where flood-waters had risen to a depth of Seasons 15 feet throughout the factory.

Open-cast coal sites were similarly hit, with several specialpurpose high-lift Univacs being despatched to sites near Leeds and Sheffield. Further south, Sykes' Bir-

mingham depot despatched the summertime for emptying or several Velovac pumps to a local construction site in Walsall where thec outractor's existing units were under several feet of

Water in

study of the feasibility of transferring water from the Mantaro River in the Amazon headwaters to the rivers flowing into feet. Pacific is consulting

The Government of Peru has appointed the British engineering consultancy which will have

duration of the study.

The scheme is designed to augment water supplies to the city of Lima and also generate additional hydro-electric power. Offshore costs of the study are being financed by a World Bank loan.

For all

ALTHOUGH SEASONALLY appropriate — it is an instant answer to flooded basements-a self-priming pump from Italian manufacturer, Ercole Marelli, is marketed under the name "Holiday" and can be used in

filling swimming pools. Gardeners will be able to spray or water large areas, too, and its easy portability (it weighs only 17 lb) makes it a not too cumbersome extra in a reducing builder's van, or for use by problems. engineers or contractors.

The pump is enclosed in a dome (which forms a high shock resistant cover), is powered by location of trouble-in the car, and is capable of delivering 20 gallons of water a minute, with a head of 23 feet, or six gallons; back, says the company, as it minute with a head of 110

pump is enclosed and water-proof, it promises ultimate safety in operation.

'Available from importer Uniflow Engineering, Grafton House, Hollybush Lane, Burghfield Common, Berks.

Control of lifts

ONE OF two lifts, working on collective-selective simplex or duplex command, in buildings with up to 24 floors, can be controlled by a system based on a

the zir, and hundreds of electro-storey, with strip foundations mechanical relays, it has a high and steel and timber roof. level of dependability, says Isralift Elevator Industries, P.O. Housing the

as usual control systems and the LESSER Building Systems microprocessor needs only a fraction of the space required by conventional systems, thus machine - room

Service costs are cut by which detects and pinpoints the single phase electric motor, shaft, or in one of the plug-intype printed cards.

Maintenance costs are also cut

takes only two or three hours to train personnel to use the three sites-Yanbu, Al Musayjib There is a rubber covered foot instrumentation.

CONSTRUCTION GROUP

P.O. Box No. 6, Park Hall, Salford Priors, Evesham, Worcestershire Tel. Bidford-on-Avon 3721 (20 lines) STD(078 988) 3721

Aberdeen library extension

ONE OF Aberdeen's best-known buildings, the Central Library, will be extended under a £900,000 contract awarded to Abergien Construction.

The company will build a seven-storey, steel-framed extension on piled foundations, and a new mezzanine floor in the

existing lending library.
Other alterations include renovation of the boiler house, installation of new boilers and equipment, replacement of the heating installation and linking the extension to the existing

£1.5m award to Bovis

The largest of two contracts won by Bovis is a £1.5m extension to Fox's Biscuit's produc-tion facilities at Victoria Avenue, Batley, West York-shire, Work involves the construction of a part two-storey, part three-storey structure to accommodate two further ovens

for biscuit production.

London Transport Executive has awarded the company a contract for about £183,000 for a new tool store at its Lillie Bridge depot, London SW6. The 4,000 square feet building will micro computer.

Due to the elimination of be of brickwork construction, thousands of contacts open to part single-storey, part two-

Box 350, 31 Hakishon Street, Bnei Beraq 51020, Israel. Mean-time-between-fallures Mean-time-between-fallures

(Export), of Verwood, Dorset, has won a contract worth over fin for the supply of overseas accommodation units to Saudi-

Supapac bungalows and Supaaccompanying instrumentation com office units are to be supplied to Construction Development Corporation of the Philippines which is working on the pipeline running from the desalination plant at Yanbu to Medina. Resident Engineers will live in the bungalows on

Power station site preparations

THE DEMAND for electricity geological mapping and a pre-in Ireland is rapidly increasing, liminary hydro-geological study rocks for the whole of the in-and is particularly crucial for a fresh water supply to meet vestigation will be carried out where an industrial development is now taking place along the station.

The operating requirements for at the company's laboratory at a the company's labora the River Shannon.

technical investigation for a of carboniferous age. It is pronew £420m (at 1978 prices) posed to make major excava-900 MW power station to be constructed on the north bank of the Shannon estuary at Kilrush in County Clare Kilrush in County Clare.

In addition, it will undertake compaction trials.

LEGAL NOTICES

TO THE FORMER SHAREHOLDERS OF COMPANHIA DE DIAMANTES DE ANGOLA: SARI (DIAMANG) WHOSE SHARES WERE NATIONALISED CONVOCATION

WHOSE SHARES WERE NATIONALISED CONVOCATION

The shareholder: of Commanily de Diamantes de Angola, whose shares were nationalised by Decree 61'77 of the 30th August, of the Popular Republic of Angola, are comoked to meet in Lisbon, on the 22nd January. 1979, at 3.00 p.m. at "Feira Das Industrias." entrance by Mua Meca Mousinho de Abuquerque. With the following of THE DAY

(a) To GROER OF THE DAY

(a) To GROER OF THE DAY

(a) To decide of the steps taken to assequate the interests of the shareholders whose shares were nationalised by the decree herebowe indicated.

(b) To decide about one proposal submitted in accordance with Decree-Laws 30'177, 557-A'77 and 103-A78, for the constitution of one new company with the assets and in Portugal! (c) the deciden fortiden in the required deeds, seconding to the decision fortiden in the previous paragraph.

1. The decumentation regarding the

MOTOR CARS

1978 BENTLEY T2 SALOON.

Silver Chalice with Dark Blue Hide. 1.500 miles. 1978 ROLLS-ROYCE SILVER SHADOW II SALOON

Pewter with Green Hide, 1,100 miles.

interior trim. 7,000 miles.

Hrde, 5.500 miles.

1978 BENTLEYTZ SALOON

1978 ROLLS-ROYCE SILVER SHADOW II SALOON

Black with Special Tan Hide. 4,000 miles.

1972 BOLLS-BOYCE SUVER SHADOW USALOON

1977 ROLLS-ROYCE SILVER SHADOW II SALOON

Caribbean Blue with Red Hide. 28,000 miles.

Le Mans Blue with Black Hood and Black Hide.

1978 ROLLS-ROYCE SILVER WRAITH II without Division.

Honey with Dark Brown Everflex Roof and Dark Brown

We lease top cars

for top people

Chestnut with Beige Hide. 13,300 miles.

1976 ROLLS-ROYCE SILVER SHADOW SALOON

1974 ROLLS-ROYCE CORNICHE CONVERTIBLE

Moorland with Beige Hide, 6,000 miles.

Carnival Red with Black Hide and Red inserts and special

The site is underlain by sand-

This has necessitated a geo- stones siltstones and mudstones

Rockfill produced from this Soil Mechanics of Bracknell, exercise will be used to reclaim Berkshire, has been appointed an area of the foreshore. Trial to advise the Electricity Supply excavations are being made, Board, Dublin. Republic of both by drilling and blasting Ireland. The company will and by ripping, in order to in-supervise the site investigation vestigate problems associated comprising 147 borings with with bulk excavation and filling diamond drilling and 23 trial Products from these excavations are being used in spreading and

PERSONAL

ALL THOSE WISHTING to enter the 1979 CUTTY SARK NATIONAL CROSSWORD

REHROWEN -

OFFICIAL ROLLS-ROYCE & BENTLEY DISTRIBUTOR.

1978 ROLLS-ROYCE PHANTOM VI LIMOUSINE. Finished in Chestnut with Ten Hide to the front and Stone Velvet to the reac Fitted with cocktail cabinet, stainless steel strips to wheel arches and Rolls-Royce badges to rear quarters. 1,500 miles.

1972 ROLLS-ROYCE SILVER SHADOW SALOON. Astral Blue with Silver Mink side panels and Blue Hide. 3,600 miles. 1971 BENTLEY CORNICHE SALOON. Finished in Porculain White with Dark Blue Hide. Full service history. 15,000 miles.

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have been in service for many Pipe of 400mm and 500mm deposit of the shares in credit institutions stipulated in Decreat 70-A/75 and
112/76 of the Popular Republic of
Ampela, dated respectively of 10th July
and 25th August. The presentation of
this document is not required for those
shareholders that were present at 1977,
or at the service of the those
shareholders that were present at 1977,
or at the service of the those
portuguese shareholders will be made by
means of tha dentification card, and for
the foreign shareholders, by means of the
passport
4. Any shareholders, by means of the
gassport
4. Any shareholders, by means of the
passport
5. Any shareholders, by means of the
control of the meeting.
Lisbon, 19th December, 1978.
Lisbon, 19th December, 1978.
The Directors as per Decree-Lise, 157-A/77
EANCO FONSECAS AND BURNAY
MARIO AUGUSTO DE PAIVA NETD
EDUARDO SEBASTIAO VAS
DE OLIVEIRA
APTUR DE FIGUEIREDO NUNES
SELARMINO ANTONIO FILOMENA DA
CONCEICAO DA SILVEIRA diameter has been successfully used to reline gas mains in Croydon, Harrow, and Poole,

Life of ·

gas mains

extended

THE LARGEST diameter poly-

ethylene pipe produced by Stewarts and Lloyds Plastics of Huntingdon, part of the British

Nearly 3,000 metres of pipe, in 12-metre lengths, has been fed through mains in the three areas, extending the life of the mains at minimum cost and with the minimum of inconvenience to road users.

Croydon main The beneath the busy A22 Eastbourne Road, and a complete would have replacement involved excavation along the entire length of the main.

By using polyethylene pipe to reline this and the two other mains, lengths of up to 326 In this way excavation was kept to a minimum and interference with traffic flow cansiderably

1978 ROLLS-ROYCE SILVER SHADOW II SALOON

1977 ROLLS-ROYCE SILVER SHADOW II SALOON

1977 ROLLS-ROYCE SILVER SHADOW IT SALOON

1975 ROLLS-ROYCE CORNICHE CONVERTIBLE

1974 ROLLS-ROYCE SILVER SHADOW SALOON

1973 ROLLS-ROYCE CORNICHE CONVERTIBLE

1972 ROLLS-ROYCE SILVER SHADOW SALOON

1973 ROLLS-ROYCE SILVER SHADOW SALOON

1969 ROLLS-ROYCE SILVER SHADOW SALOON

01-629 9060 Berkeley St. W1. 01-584 8451 South Kensington, SW7. 01-998 7691 Greenford, Middlesex for Seles, Service & Parts.

46,000 miles.

Le Mans Blue with Magnolia Hide. 16,000 miles.

Walnut with Tan Everflex Roof and Beige Hide.

Silver Mink with Dark Blue Hide, 39,500 miles.

Astral Blue with Light Blue Hide, 48,000 miles.

Black with Black Hood and Red Hide. 30,000 miles.

Sand with Porcelain White side panels and Red Hide.

Honey with Beige Hide. 13,000 miles.

Highland Green with Dark Green Everflex Roof and Beige

Dark Olive with Beige Hood and Beige Hide. 23,000 miles.

Reed and Mallik

ORDERS WITH a total value of £1.5m have been received by Reed and Mallik, the civil engineering division of the Rush and Tompkins Group. Clients include the West Glamorgan and Buckingham-shire County Councils and British Rail. Largest order, worth £370,000, is for phase III of the harbour development at Strangaer for British Rail, Scottish Region. Work includes heavy - duty roadways and vehicle marshalling areas.

Steel Corporation's Tubes Division, is being used to give a new lease of life to gas mains which £2.5m for

INCLUDED · IN awarded contracts totalling around £2.5m won by the Burnett and Hallamshire Group subsidiary, Camm (B and H), is a £1.2m trio of "term contracts" for the DOE (Property Services Agency) at RAF Wyton, Wittering and Alconbury, covering general building and civil engineering works.

Further building and civil engineering works, under a £498,000 contract, are for British Steel Corporation's continuous feeding scheme at Aldwarke Melting Shop at Rotherham Works.

Other jobs include work at metres at a time were inserted. Hallamshire Industrial Estates development at Garretts Green. Birmingham, and Nassimeton sewage treatment works at Easton-on-the-Hill.

CARRYING OUT an 18-month

GRANGE MOTORS Rolls-Royce Specialists

1977 (S) Relis-Royce Poentom VI. Willow gold over natures. Ten leather to front, ten velour to rear. Sony TV. Cocktoil cabinet, cassetts redio/stereo to front and rear. Recessed rear lights. Stainless steel aills. 13,000 miles.

1978 Rolle-Royce Comiche Convertible Mk. II. Ivory, derk brown hide piped in magnella, derk brown hood. Front headrests, brown knee and dash roll, whrtewail tyres. 1,800 miles.

1977 (S) Rolls-Royce Comiche Convertible Mk. II. Ivory, champagne hide and deer roll, dark brown hood. Front headrest, whitewall tyres. 10,000 miles.

1979 Silver Wraith It. Silver send. Magnolle hide, dark brown Everliex root with RR emblems. Front head restraints, Picnic tebles. Whitewall tyres. 900 miles.

Everflax roof. 7,000 miles 25,550

1977 (T) Silver Shadow II. Cardinal red, red hids. 7,000 miles 23,750

1977 (S) Silver Shadow III. Cardinal red, red hids. 7,000 miles 23,750

1977 (S) Silver Shadow III. Cardinal red, red hids. 514,950

1977 Silver Shadow III. Silver sand, brown hide, whitswall tyres. 14,000 miles 23,950

1976 Silver Shadow LHD. Cardinal red, magnolis hids. 600 miles only 229,960

1977 Silver Shadow. White, red hids, black Everflax roof. Front headrests, cassetts player. 14,000 miles 22,950

1976 Silver Shadow. Regency bronze, black hids. Electric sonroof with black Everflax. 14,000 miles 27,950

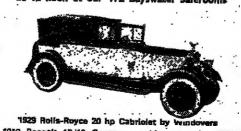
1976 (R) Silver Shadow. Regency bronze, dark brown hide. Front and rear headrests: 17,000 miles 27,950

1976 Silver Shadow. Seychelles blue, belge hide, 14,000 miles 27,950

Brentwood, Essex. Tel (0277) 216161 Sunday opening hours Hana-Ipm. Leasing available on all cars.

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Air France-taking off into an era of mass transport and cheap fares

BY MICHAEL DONNE

IN COMMON with other major European sirlines, Air France is moving into an era of mass transport that will require some major changes in the air-line's thinking, and will involve new types of aircraft, new fares policies and higher staff pro-

During the past year (1978), the airline has achieved some significant results, including carrying over 10m passengers in a year for the first time, and earning profits of around. FFr 200m. Had it not been for the French air traffic con-trollers' go-alow during last summer, which severely dis-rupted the airline's activities, profits whould have been higher. The architect of this success, who will also be responsible for carrying the airline into the 1980s, is Pierre Giraudet, 59, the Government appointed president of the airline. By training, M. Giraudet is a public works engineer, but from 1967 to 1974 he was with the Paris Airports Authority, first as investments manager and then as assistant general manager, during which time he was deeply involved in the development planning of the new Paris Airport at Roissy-en-France (Charles de Gaulle). In early 1974, he was appointed by the Government as general man-ager of the RATP — the

Future plans

Mr. Giraudet has no doubts is a period of change," he says.
"I think the next two decades
will be the decades of mass. transport, with very big aircraft and very cheap fares, and the whole population will have access to air travel."

organisation running the Paris

Metro and bas services — and

he thus became the logical can-didate to take over Air France in late 1975.

But he does not see this move towards cheaper air travel in Europe becoming widespread uptil productivity and efficiency in the airline industry generally, and in Air France in particular, have been improved.

Although the problems of



competitive modernisation. available means.

"This is a general problem, but perhaps we are in the van-guard of this struggle because air transport has to cope with international competition more than any other industry. For example, 80 per cent of Air France's business is inter-national Effectively, therefore, we in Air France must improve our efficiency. This does not mean decreasing the staff, but increasing it at a slower rate than our activity increases, thereby improving productivity. Also, the policy of Air France will be to face up to competition in all aspects of about the problems and his the market both passengers plans to deal with them. "This and cargo, in the high-quality as well as the low-fare market. We have to have the best pro-ducts for every category of the market, and this is why we intend to improve our fleet, to

have only the hest aircraft." But Mr. Giraudet believes that other aspects of the airline industry need to be improved for example overall marketing methods. The time is ripe for innovative thinking and bolder techniques.

"For the past 30 years the airlines may be more acute. have been using the methods they are in fact facing the and products of the men who same problem that confronts all. pioneered civil aviation, and European industry—that of they did a very good job indeed.

If But, during those 30 years, there we don't intend to reduce our were few changes in methods standard of living, we must and products, and now they are increase our efficiency by every no longer in tune with the

modern market." Among the new concepts he believes will be necessary are new classes of cabin service, to fit the new types of fares to be

Traffic growth

He is not opposed to the current American concept of stimulating traffic growth by increasing competition and cutting fares, but like many other European airline chiefs he is opposed to U.S. Government attempts to impose its ways on other countries, and especially the attempt to introduce "open skies" policies in all its new bilateral air agreements. Mr. Giraudet does not think

these ideas will work in Europe. Economic conditions are not the same throughout the world. I think the American policy is a selective one. Their policy is Middle East and Africa, the over-simplified by theoreticians airline will use more of the situation is much more complex, involving such things as regularity of service, public and interest, employment and the balance of payments in the countries concerned." M. Giraudet places con-siderable emphasis upon Air

France's fleet planning, and he foresees the future being built the Boeing 747 Jumbo jet, and the European Airbus—the latter being the aircraft which made most money for Air France during 1978. The 747 will be used on long-range routes in three versions—a " combi ' version, a capable of use in both passenger

cargo version. The normal version will itself come in two types—a high-expensive in the world," says density model with 500 seats, Mr. Giraudet. "We contend that and the other a mixed-seating version for both high and low- the most expensive and the cost fares. "We will start with most numerous aircrews. We two of the 500-seaters in 1979. At present, we are studying ideas for both three-class and two-class concepts of cabin service. We have already introduced a new "business-class" for full-fare passengers."

In addition to the 747, the airline will make extensive use of the Airbus. On routes to the B-2 Airbus, and in the longerterm future the new 200-seat A-310 version, for which Air France is one of the "launching customers," along with Luft-

We do not as yet know the exact proportions in our fleet of A-310s and B-2s," says Mr. Giraudet. "But we are studying a high-density version of the Super B4 with more than 300 seats, and we hope to have two circraft of this type in service in 1979, on such routes as Cairo, Tel Aviv or Istanbul.

The airline is thinking of introducing an entirely separate low-fare, high-density traffic operation, in addition to cater-ing for normal higher-fare traffic. The operations will need to be separate, with their own sircraft, because the cheap-fare market is already developing at about 10 per cent a year, much faster than the 3 to 4 per cent growth in the normal full-fare "We have to adapt our fleet to these differentials. says Mr. Giraudet. This is only the start of the

airline's fleet changes. It will continue to use the Boeing 727s on medium ranges, because there is no suitable aircraft yet to replace it. But the airline will also eventually need to replace the ageing Caravelles. It had originally wanted to buy the Boeing 737 for this, but was frustrated by opposition from its pilots' union.

The union objected to only a two-man crew on the flight deck, and cargo roles, and an all- and insisted on a three-pilo crew. This the sirline rejected. "Our crews are among the most it is not possible to have both the most expensive and the could not use the 737 under such conditions and still be competitive. So we decided the best solution was not to buy the aircraft,"

Lifticiency

While Air France might eventually be interested in any new short-range Joint European Transport (JET) venture, developed by Airbus Industrie. Transport (JET) who believe that only comSuper B-4 version of the aircraft developed by Airbus Industrie, petition is essential for "as it is proving very efficient auch an aircraft would have to economic progress. I think the situation is much more complex, range routes the basis of the would have to be as efficient as airline's operations will be the the Boeing 737, and the pilots B-2 Airbus, and in the longer- would have to agree to two-man France's competitive ability. "If these conditions are not met. our opinion is that we cannot buy the new aircraft."



Pierre Giraudet-responsible for taking the airline into the 1980s.

Air France is not yet interested in the new twin-engined Boeing 757 which has been ordered by British Air-"I don't think this aircraft interests many European airlines, because it will have about 180 seats and be very close to the A-310. It is also a narrow-body, and carries less cargo. I am sure it will be a very good aeroplane, but probably less profitable than the A-310. But we would be very interested in a smaller, 150-seat

Concorde loss

Mr. Giraudet is also concerned about the future of Concorde. "Up to the present, Concorde operations have not proved profitable. We do, of course, have a Government subsidy, but we have to accept a proportion the loss. We would interested to come to terms with the Government on this."

He believes that if the Government were to accept a bigger share of the operating losses, the airline could expand its Concorde activities. " Life in the international air transport business is too difficult at the important that we must come moment for us to agree to to a solution in the near increase our costs. We love future." Concorde. We think it is a marvellous aeroplane. But I cannot sacrifice the long-term economics of Air France for

Concorde.

tipuing policy, says Osro, Trubro

It has announced several new

liquid compounds which can be

used in all types of barrel,

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to be particularly suitable for high energy finishing machines

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also non-abrasive, is well suited to ferrous metals as it

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applications:

that of providing enough airport capacity to meet the traffic growth, and the need to improve air traffic control. In Paris, he believes, the airports problem is less serious, "because we built the new airport at Roissy-en-France just before the present traffic growth began. But in London, you have a terrible problem."

There are other problems to be solved, such as the prospec-tive London-Paris "shuttle" operation. "We find at the moment there are two deter-rents. The first is the terminal problem at airports. At Roissy we will not be prepared for the shuttle before 1981, and at Heathrow it will obviously be necessary to operate from the same terminal as British Airways. The second is the type of aircraft. We will have to use only large aircraft, such as Airbus or TriStar, and with large aircraft you cannot oper-ate the same frequencies that you can with smaller machines. Obviously we will have to use the most economic and profitable aircraft available, so decisions on the shuttle must be held up for the time being. But the value of this traffic is so

Overall, Mr. Giraudet is ptimistic "because we are optimistic making money. We are happy because we were profitable in 1978. We think we could be But apart from fleets and even more profitable in 1979. fares, Mr. Giraudet sees among I think we will improve our the other problems of the future position in a prudent manner."

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Dealing in a baffling commodity

have a special fascination for 'academics" — economists in particular. They have been having a field day since the OPEC-inspired oil crisis raised the spectre of commodity cartels for other vital raw materials. Learned papers on the prospects for cartels and ways of stabilising commodity prices have been pouring out from universities, research insti-tutions and other centres of earning. But there appear to be certain rules to be a member of this club. For a start the paper has to be difficult for the layman to understand. Ten words have to be used when one would do, and they must include a large percentage of obscure words and phrases. Stochastic, spatial distribution and lagged endogenous vari-ables are ideal for baffling the less enlightened reader or

slumbering listener.

Judged on these criteria, the offering - Stabilising World Commodity Marketsa strong transatlar llenger. It contains transatlantic challenger. representative selection (16) of papers given at a conference in March, 1977 at Airlie, Virginia, sponsored by the Ford

Foundation. The list of contributors is impressive, but unfortunately there is considerable repetition since each paper tends to cover the same subject, often in a very similar manner.

It is a little worrying to note that the first learned contributor, when carefully listing the locations of major commodity markets, is apparently unaware of the leading tin market in Penang, and includes a greater number of markets that have either ceased to exist or are of very limited importance. Some of the descriptions of past events, and assumptions about the future, would also surprise many commodity traders.

Nevertheless, for those really interested in world commodity trading, and with sufficient stamina, there is plenty of useful and informative material and some stimulating ideas and theories. Certainly no stone is left unturned.

Only omitted are the political problems, and harsh facts of the commercial world, which will in the end decide the future of commodity price stabilisation. Stabilising world commodity narkets; Lexington Books; markets:

John Edwards

Joehnieal Pane

METALWORKING

Hardens and tempers tools and blades

Under high pressure

A CONTINUOUS fluidised bed paratively small floor area and bardening and tempering line is will be capable of handling 12 to be set up at Howard Rotationnes of Rotavator blades per vator Company's Harleston fac- hour.

tory in Norfolk It will be used for the hardening of Rotavator blades and cost around £150.000.

Stone Platt Fluidire has won the order for the equipment which will comprise a fluidised bed hardening furnace a quench tank and a fluidised bed tempering furnace complete with combustion controls, pipework and re-circulation ducting. All the figs and mechanical handling—equipment—are included in the order.

isostatic pressing process.

In the process, materials are

seals voids and cavities and thus

It is designed to handle both steel Rotavator blades and other cultivation tools direct from the forging presses. The hardening and tempering furnaces will provide constant and con-tinuous control of the quality required for this product. After leaving the tempering furnaces the blades will be cleaned. painted and finally removed for packing. The whole process will take place on a 240-ft conveyor

loop. Stone Platt Fluid-fire is ncluded in the order member of Stone Platt Electrical division of equipment will occupy a com- Stone Platt Industries.

Fabrication of bodies for the Ant a specialised three-wheeled rehicle is being carried out at BTB Engineering's Blackburn, Lanes. works with the aid of BOC's MIG welding equipment. Bodies for the Aut

range from tipper refuse collectors and water tankers to milk floats. About half the output of Ant vehicles is sold to UK municipal authorities, the rest going to the Middle East, Nigeria and the West Indies.

HANDLING

Packs pallets fast, but with care

Separate electric motor activates rapid movement of the horizontal and vertical travel, and automatic lubrication is

The tool slide clapper is withdrawn on its return stroke by consolidated by controlled pres- electro-magnetic force. The tool sure and heat which produces a head may be swivelled by 60 plastic flow of material and degrees to the right and left for angular cutting, and the tool both lengthens the life of and slide swivels up to ±15 degrees

Hydraulic Designed to answer and

SAID TO be ideally suited to heavy duty shaping operations, such as squaring up large blocks of tool steel prior to dissinking, is the hydraulic Stanko- British Post Office approved. shaper Model 7D37, marketed by telephone answering and record-Machine Tool Agencies, Wedg- ing machines—the 6,000 series

shaper

This machine has a 13.4 horse-remote access and micropropower motor and a maximum cessor controlled machines. ram stroke of nearly 40 inches. The company says the The table is 40 inches wide and machines have been designed 22 inches long with a vertical with the requirements of over-

ONE OF the more unusual ser movement of 164 inches. vices now available on a sub-contract basis is the production able in the range 10 to 160 feet of metal components by the bot per minute and automatic table isostatic pressing process. An ASEA machine operating 0.008 and 0.2 inches per stroke of the ram.

at 23,000 psi has been set up by HIP (Powder Metals) at Carlisle Close, Sheffield Road, Sheepbridge, Chesterfield S41 9ED (0246 452888) which can press out components from a provided for the slides of the wide range of metals and ram and column

strengthens the finished com- for tool adjustment.

• COMMUNICATION record

THE FIRST of a new range of nock Industrial Estate, Rothwell —has been announced by Euro-Road, Warwick (0925:46361). fone. The range will include

HIGH SPEED seems to be the incorporating either an autocriterion for packing or unstacking leaded nations of products

Standard pallet sizes up to ing loaded pallets of products contained in cartons, trays 1,320 x 1,200 mm can drums, crates or ready shrink- with a minimum ps wrapped; yet it is important 154 x 190 x 89 mm. with a minimum pack size of

Keeping pace with modern production methods and high speed packaging lines is a high duty, low level palletiser/ de-palletiser whose specially designed hydraulically powered slat aprons maintain gentle transfer of units from layer formation to the pallet, thus pre-venting disturbance to the product, even at higher speeds, says W. and C. Pantin, Centre Drive, Epping, Essex, Call6 4JL

that no damage occurs to the

packaged product.

machine has two hydraulically powered platforms moving vertically on a stardy, compact framework and can be programmed to form layers in multiple pattern formation to suit the size and shape of various containers. An option of the "Lo-Stak"

unstacking loaded pallets. This reverses the method of operation by removing each layer and unscrambling the pattern before discharging the units.

1,320 x 1,200 mm can be handled

The equipment is available with either solid state pro-grammer and logic controls or microprocessor system

Gives speedy

TWO MAIN features of an aerial work platform called the flow and will signal relays to 355 JLG Sizzor are drivability activate sampling systems at and simplicity, says JLG Industries (UK), 5 Greens Road, Blairlinn Industrial Estate, Cumbernauld, Scotland (02387 21183). The platform has a maximum

capacity of 2,000 lb, is drivable at its maximum extended height of 35 feet and is diesel powered. All lift movements are controlled from the platform, is available for automatically although the auxiliary ground level controls can also raise and lower the position of the work platform. There is a single control for forward, reverse drive and steer, and the unit Included with each option of can travel at a speed of up to the machine is a pallet magazine three miles per hour.

6 INSTRUMENTS

Measures the flow

FLOW OF liquids and effluents through open channels or across weirs can be accurately monitored with a new non-contacting flow meter. The adjustments within the flow meter are extremely simple and it can be installed and calibrated in either a new or existing location, with in 30 minutes.

The meter is to be marketed in the UK by Hymatic Industrial Controls, a member of the Huntleigh Group. It consists of a transducer, which senses head across a weir or through a channel, and gives an output to solid state electronics which then produce a milliamp output proportional to flow rate.

The meter will also compute and give a read out of totalised pre-determined increases in total flow. An accuracy of plus or minus 0.5 per cent can be head 20411). achieved over a wide range of

Since the device has no moving parts and is not in contact with the process fluid, it is suitable for continuous use with aggressive acids and in dirty applications where solids may be incorporated in the fluid stream.

Hymatic Industrial Controls is

Seeking British goods

for British-made toys, hardware, and gifts products, arrive in the UK on January 28 and Feb-

Both are sponsored by the ment programme under which companies are encouraged to each group to discuss possibili-seek products that can be manu-factured in the province under Ontario of British products are

TWO Canadian missions looking the toy and gifts industries. The 10-member February trade mission, is searching for hardware and gift products related to door closers, tool boxes, tools, plumbing and heat-Government of Ontario under its ing items, cookware, fireplaces, industrial and trade develop- and metal leisure products.

Meetings with members of licence for distribution throughout North America.

The group arriving in late

January includes representatives of 11 manufacturers active in don, SWIY 4QS. (01-930 6404.)

PROCESSING

Filtering the water

EQUIPMENT which has been trial water and effluent treatment plants in the U.S., has now been introduced to the UK and European market by Environ-(United mental Elements Kingdom), Nicholson House, Nicholsons Walk, Maidenhead, Berkshire SL6 1LD (Maiden-

The automatic backwash filter flows from 0.3 to 85m gallons per is of the rapid gravity type and day regardless of variations in can be used with various types ambient temperature, it is of substances, such as sand, activated carbon, or a mixture of sand and anthracite.

Normally supplied in kit form, the filter is said to combine highly efficient filtration with low head loss, low power consumption and completely automatic backwashing with no loss of capacity.

Standard sand filter has a

approximately 150mm, When used for many years in a wide the head rises by 50-75mm, the variety of municipal and indus-filter automatically commences a backwashing cycle which consists of the travelling gautry, complete with backwashing pumping system, travelling along the length of the filter and cleaning a 200mm wide area of filter bed at a rate of 560mm per minute.

When the cleaning cycle has been completed, the gantry parks and awaits the next instruction to commence cleaning, this time in the opposite direction.

Dual media and activated carbon versions each have media beds up to 1,170mm deep and operate in a similar manner to the standard sand filter.

In the case of the activated carbon filter, the travelling gantry can be provided with a media removal system for the at Orchard Street, Redditch, 280mm deep sand bed and convenient transfer of spent Worcs. B98 7DP. (75 67841). operates at a head loss of carbon to regeneration.

Atlas Copco compressed air systems.

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Atlas Copco

surface improvement of ferrous COMPUTING exceptional long term corrosion

ponents may be left in the wet Lowers cost condition for considerable the compound is not rirsed away. When used with vibra-tory/barrel processes it should of wordr contains a rust inhibitor. It is give a very clear, bright hussn. for use where an "in-tub" All these new liquid comdegreasing cycle of heavily pounds are fully compatible with all other liquid compounds is required with all other liquid compounds. processing

puter systems and a new single/ dual user system, the WS80 have been launched at Syntopicon VI, the word processing exhibition that gathered at the Gateway Convention Centre in St. Louis, U.S.
The WS200, with maximum

WS200 word processing com-

storage exceeding 8,000 pages, is market demand for a low cost per terminal system.

WS200 configurations range up to the WS248 system with eight terminals and four printers, bringing per-terminal costs as low as £5,816. The WS30 single/ dual user system starts at £11,130 with the cost per terminal of a two-user system £7,625. Deliveries are scheduled to begin in January 1979.

This development is expected to foster the work group concept, whereby document processing is carried out efficiently by several users who share a central docu-ment bank, For example, corporate counsel can monitor the development of complex con-tracts; executive and secretary can share telephone logs and correspondence files; or large tasks can be subdivided within a work group to spread out peak

A new VT100W word processing video terminal has a detached keyboard, double-width and height caracters, smooth scrolling, and a variety of functions-reverse video, blin. ing and underlining, and normal

video at dual intensity. WS200 systems use a new storage medium, the RLO1. removable-cartridge disc unit. which stores up to 2,000 pages. of text per cartridge. Systems will accommodate up to four RLO1 units for a total of 8,000 pages of new and pre-stored text, abbreviations, lists, and system software. Storage is supplemented by a dual-drive flexible disc unit for up to 250

pages of additional space. Digital Equipment Company, Digital House, 252 Kings Road, Reading, Berks. 0734 583555.

LOMBARD

8

Big can also be beautiful

BY GEOFFREY OWEN

been a cardinal element in the U.S. antitrust laws. In con-they want to ensure that no sidering merger proposals, for Motors dimensions are created example, the antitrust agencies Motors dimensions are created and the courts are supposed to 48, strictly speaking, irrelevant Eyet in practice the sheer size of companies has been and coninues to be a matter of concern to the authorities.

During the 1960s there was about conglomerate mergers, which were outside the antitrust net because they did not directly affect competition, but were thought to contribute to an excessive glomerate mergers then went out of fashion, but in the past large take-over or merger; a recent example is the proposed of \$4.3bn) and Eaton Corporation (sales of \$2bn).

Attacked

Some of these deals have been attacked on antitrust grounds, but officials in the Justice Department evidently feel that their powers need strengthening; they are preparing legislation which would allow the Government to prohibit most mergers involving assets or sales of \$2bn or more.

Whether anything will come of this proposal remains to be seen, but it is an interesting example of how competition policy can get entwined with a general concern about economic power. In an extreme form this can take the form of trying to preserve small companies and fragmented industries for their own sake, ignoring any efficiency gains that might result from ment is that on performance the creation of larger groups. An industry in which there are ten competing firms, none with more than 15 per cent of the market, is thought to be better, on social grounds, then one consisting of four companies, the largest with 40 per cent. There have even been proposals that oligopolistic industries should be concentrated" in such a way that no company could ever hold more than 12 per cent of the

For the most part these theoretical ideas have been con- balance between large and small recommendations to congres- anti-merger policy one surely applied with a fair degree of it possibly be, to quote one enthusiasts remain unhappy

† Indicases programme

12.45 pm News. 1.00 Pebble Mill. 1.50 Barnaby. 3.15 Songs of Praise. 3.53 Regional News

England (except London).

2.55 Play School. 4.20 Maxidog. 4.25 Jackanory. 4.40 Playhouse.

"MERE SIZE is no offence." the largest corporations. This principle, enunciated as would like to break up IBM and far back as 1920, has always General Motors into smaller pieces; if that is not possible,

Yet if the Eaton-Firestone concern themselves with their merger, for example, does not impact on competition; whether reduce competition in the the accurring company has a markets in which the two comthe acquiring company has a turnover of \$50m, \$500m or \$5bn panies operate, it is hard to see any economic grounds on which the Government could object to it. The two managements evidently think they will do a better job for their share-holders and their customers as a result of the deal; if they are

mistaken they will pay the penalty—in the marketplace. But one is left with a nagging thought-is concern over corporthan concern over competition concentration of power. Con- itself? Anti-trust policy in the U.S., as in the UK, has been based on the assumption that year or so there has been a competition between a number remarkable revival of the very of companies is more likely to large take-over or merger; a induce desirable economic performance than concentration. union between Firestone (sales Thus a merger between company A. with 20 per cent of the market, and company B, with 15 per cent, is generally pro-hibited unless the impact on competition is offset by compelling industrial or techno-logical arguments. These arguments are notoriously difficult to substantiate; investigat-ing bodies, like the Monopolies Commission in the UK. have to balance an apparent lessening in competitive pressure against highly speculative forecasts about future efficiency gains.

Inconclusive -

Some critics believe that conventional antitrust policy pays far too much attention to the forms of competition, particularly price competition, and not enough to performance-cost reduction, innovation, productivity and so on. Their argunant and even growing share of its particular market, is in many sectors preferable to a number

of small-scale competitors. The awkward fact is that the empirical evidence on competition and concentration is far from conclusive. Perhaps this means that antitrust has to rely less on economic than on noneconomic arguments such as the need to ensure the diffusion of power and to preserve a

As you were at the Parole Board

TO THE uninitiated the resignation of Lord Harris as Minister of State at the Home Office to become chairman of the Parole looks like a piece of blatant self-appointment; the more so since for the past four years he has been the Minister responsible for prison administration and in par-ticular for the workings of the Parole Board. But if the Home Secretary's selection of his junior Minister to fill the vacancy of a crucial institu-tion within the prison adminis-tration is open to that kind of

That the prison system is in crisis was amply demonstrated by the setting up by the Home Secretary last November, in a state of high urgency, of an independent commission of inquiry under the chairmanship of a High Court judge. For some time prison officers have been in ferment over their pay and conditions of service, aggravated by the growing inmate population leading to overcrowding of almost all our penal establishments.

One of the basic ingredients of the discontent is their precise role in the modern penal system. Disillusionment over efforts to rehabilitate prisoners plus public demands for tighter security and containment of

inmate relationships difficult. conceived as a sensible method for reducing the prison population. Its authors cared little for, and paid no attention to the philosophical objections to a system that gave fresh arbitants. trary powers of release to the executive over prisoners sentenced by the courts.

For a variety of reasons parole has been at best only a qualified objection, there is much more success. It has meant that to the appointment than that increasing numbers have bald political manoeuvre. than otherwise would have been the case-but at what cost? One of its defects is that it has introduced a new element in staffinmate relationships that has fed the current discontent among both prison officers and prisoners. Hopes raised by the prospect of early release have frequently been dashed, to the accompaniment that prison staff are responsible for failure.

It is at this point-ten years on from the beginning of parole -that the new chairman must have the complete confidence of the prison service if further worsening of staff-inmate relations is to be avoided. Any suggestion that the new new policy that ostensibly Penal

he thoroughly familiar with the parole system assert that prison

Inmate relationships difficult.

The Parole Board was set up workings of parole would serve Heme Secretary's. Advisory reform, he will, however, find by the Criminal Justice Act, only to alienate further the Council on the Penal System. 1967; it had a thoroughly pragmatic foundation, in that it was conceived as a sensible method for reducing the prison population. Its authors cared little for, and paid no attention to:

In the parole Board was set up workings of parole would serve Heme Secretary's. Advisory reform, he will, however, find Council on the Penal System. But each approach has been associated with; if not children could be no more appropriate has been associated with; if not choice to succeed Sir Louis necessarily himself sympathetic than Lord Harris. Not only is The more radical critics of the thoroughly formiliar with the name assert that prison.

THE WEEK IN THE COURTS

BY JUSTINIAN

prison system over the past few years. He has visited penal establishments widely and made has all the qualities for achieving just that.
But there will be no corres-

ponding cheer from those concerned generally with penal affairs. On this score Lord Harris sets out on his task with a number of handicaps, not least of which has been the reluctance of the Home Office to envisage a appointee might strike out on a radical rethink of parole policy, new policy that ostensibly Penal reformers have been

shown himself to be an adroit sion of a fixed proportion of the administrator, sensitive to the issues that have bedevilled the prison system over the past few years. He has visited penal contact with both staff and decision, and is moreover disprisoners. If anyone could be said to have the confidence of th said to have the confidence of between prisoners. That move the prison service, Lord Harris ment can hardly be advanced by Lord Harris's appointment to

the chairmanship. The more moderate reformers, likewise might not find and gauged whether the public too much comfort. No one would tolerate early release, doubts the liberal instincts of These cases have not exclusively Lord Harris; he is acknow involved dangerous prisoners, ledged to be on the intellectual but also those who have com-Right of the Labour Party and shares with that segment of Labour politicians a distinctly. If Lord Harris, in conformity all the signs of radical approach to issues of with the mood of penal re- hardly be helpful.

pursue a policy of moderate reform, he will, however, find that his ministerial background

The judiciary generally accepted the principle of parole initially, with some hesitation, but later embraced it wholeits ability powerfully to in-fluence the extent of any impact contemporary problems of the sentences should be served in the courts. Over the years the prison service but he has also custody, subject only to a remis. Judges on the Parole Board shown himself to be an adroit sion of a fixed proportion. strikes a balance between the sensible early release of good risk prisoners and a denial of the privilege to prisoners who represent a risk of repeated crime as soon as they are policy the Board has indulged in a good deal of re-sentencing; that is to say, the Board has looked at the offender's crime for which he was imprisoned mitted very lucrative, non-

accommodated the varied com- advocating at least a review of social policy. If his aim is to formers, wants to move in the plaints made by prisoners of the the system, preferably by the pursue a policy of moderate direction of granting release workings of parole would serve Home Secretary's Advisory reform, he will, however, find solely on the basis of the likelihood of further crime in the future, without reference to past crimes, there will be resistance within the Parole

potential conflict within the

policy towards parole. Nothing much will change, and that for a penal system that is showing If Lord Harris, in conformity all the signs of strain can

Contrasting publications

AT A TIME when racing is comthe added problems of a freeze-Racing Annual is again with us. The 1978-1979 annual runs to nearly 300 pages and, although not cheap at £2.50, it strikes me as well worth the outlay.

fined to academic studies and companies. But for a forceful O'Brien, Robert Sangster and sional committees; the antitrust needs a more convincing intelliment would have seen no point in laws themselves have been lectual basis than this. Could selling unless they got somepragmatism. But the antitrust American economist, that "anti- in the Classics-his potential I trust has been the most durable | mean, on top of his basic value at the moment. economic hoax in history "?

were to finish nowhere in the that is a tag of £3m. Had he gone on to win the Guineas, I I estimate he would be worth £4m, definitely. And if he had taken the Epsom Derby as well his value would have jumped to

RACING

BY DOMINIC WIGAN

that you had the Irish Sweeps Derby and if he had maintained an unbeaten record, the sky was the limit, I saw him as the fibest colt since Nijinsky."

The Sean P. Graham Racing Annual is available through W. H. Smith and other leading

"As I saw it, he was worth crammed into the page allocated to each stallion that it was not always easy to read.

Now, in the register for 1978 (£15.75 post free from 55, Curzon Street, London, W1), two pages have been allcoated to every stallion, which not only allows space for much improved lay-out, but also has permitted the compilers to include extra information.

In particular, there is considerable added detail about the tail female line, with principal performances and winners, each stallion's racing career is now set out tabular style for easy reference. .

Volume XXXII is a necessity for most practical breeders who have to arrange matings, as it is the only standard work of reference which allows one stallion to be compared with another.

Full pedigrees to the fifth generation, with particulars about ownership are the most vital features. In addition there are a number of indexes which Another publication which is cannot be found elsewhere. For likely to make absorbing read-example, the 156 leading ing but for a different group stallions featured in the book, of readers, is the Register of are specially indexed under their own sires. Another index shows horses and mares with editions of this work was that two or more generations in the

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2.25 The Monday Mathres: "Return of the Gunfighter." 5.15 University Challengs. 6.00 Westward Diary and Sports Deak. 10.22 Westward Late News. 10.30 Country Style. 11.00 The Hortor Film: "A Study in Terror." 12.40 am Faith for Life. 12.45 West Country weather and shipping loracast. YORKSHIRE

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There are other areas of

Board. For some time there has been a disagreement over whether the Board, in turning down a prisoner's parole, should state explicitly the reasons for denying him parole. The Home Office has undertaken an experiment of giving reasons; the results have not convinced the opponents of stating reasons that it would be either wise or practicable for the Board to state why it refused to grant parole. Here again Lord Harris's association in the recent past with official disinclination to go ahead with a scheme of giving reformers to think that his alter the nature of parole. The conclusion of the cogno-

scenti will be that, far from the appointment of Lord Harris nepotism, it is a subtle choice to ensure continuity in official

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for the connoisseur

paratively dead-even without £2m at that point, even if he up—many of the sport's 2,000 Guineas. But on potential followers will be pleased to you could put an extra million learn that the Sean P. Graham pounds on his head at least,

The 30-odd articles include fascinating pieces on the Try My Best saga and on J. P. McManus, one of Ireland's most flambuoyant post-war gamblers. Few people may remember that Patrick Gallagher, the 27year-old managing director of the Gallagher Group, paid £750,000 for a quarter share in Try My Best early last year and the story relating to how and why he bought into that syndicate is explained fully for

the first time to my knowledge. Reflecting on the transaction, Gallagher comments "Looking back on the negotiations that led up to the final clinching of the deal, I realised that Vincent the others in the syndicate thing for the colt's prospects Thoroughbred Stalliens.

£7m, possibly £8m. And after

A possible criticism of past

All IBA Regions as London except at the following times:

ANGLIA

ATV

A. I. Y.

10.15 am Something Different. 110.30
The Golden Age of the Ginema: "Things
To Come." I-20 pm ATV Newsdesk.
5.15 Oh Noll It's Selwyn Froggitt. 6.00
ATV Today. 10.30 Left, Right and
Centre. 11.00 Our People. 11.39
Ramahy Janes.

ATV Today, 10.30 Left, Right and Centre. 11.00 Our People. 11.30 Bernaby Jones.

BORDER

8.30 am The Undersea Adventures of Ceptain Nemo. 9.35 A Diery of Civilizations. 10.25 Thomas and Sally. 11.15 Poyai Meundy. 11.40 Occat. 11.55 The Sweet Sugar Doughnut. 12.20 pm Border News. 2.00 Houseparty. 12.25 Matines: The Sun News Setts. 5.15 University Challenge. 6.00 Lockaround Monday. 6.20 Cartoon Time. 10.30 Lette Film: "Twilight People," 12.00 Border News Summary.

12:00 Border News Summary.

CHANNEL

1,18 pm Channel Lunchtime News and What's On Where. 2.25 The Monday Matunee: "The Return Of The Gurffighter." 5.15 University Challenge. 6.10 Spidermen. 10.28 Channel Late News. 10.32 Country Style. 11.00 The Horror Film: "A Study in Terror." 12:40 am Channel Gazette followed by News and Weather in French.

GRAMPIAN

so much information was stallion pedigrees. 10.00 Monday Night Film:
"Vanishing Point"

12.15 am Close: A painting by
Leonardo da Vinci with
music by J. S. Bach Report Wales. 10.35 The Monday Film: "The Triple Echo."
HTV Cymru/Wales—As HTV Genezal Service except: 1.20-1.25 pm Penawdau Nawyddion y Dydd. 2.00-2.25 Hemdden. 5.00-5.22 Y Dydd. 8:20-9.00 Yr Wythnas. HTV West—As HTV General Service except: 1.20-1.30 pm Report Wast Headlines. 6.22-7.00 Report Wast.

SCOTTISH

S.CUTITSH

9.30 am Operation Skua. 10.25
Thomas and Sally, 11.15 Royal Maundy.
11.40 Osear. 11.55 The Sweet Sugar
Doughnut. 1.25 pm Nawa and roadand weather. 5.15 Cartoon. 5.20 Crossroads. 6.00 Scotland Today, 6.20
Crimedesk. 6.30 Sale of the Century.
10.30 From the Top. 11.00 Late Call.
11.05 The Detectives: Columbo. SOUTHERN

ANGLIA
9.30 am Animeted Cleasic. 10.25
Thoras and Sally, 11.15 Royal Maundy.
11.40 Occar. 11.55 The Sweet Suger
Designaut. 1.25 pm Anglis News. 2,00
Houseparry. 2.25 Monday Film Matines:
The Invasion of Johnson County."
5.15 University Challenge. 8.00 About
Anglis. 10.30 Feature Film: "The Loyed
One." 12.40 am Reflection.

A TV SUUTHERN

3.30 am Space 1999, 10.25 "Lucas
Tanner." 11.40 Oscar. 11.55 The
Sweet Sugar Doughnut. 1.20 pm
Southern News. 2.00 Houseparty. 2.25
Monday Mennee: "I Was a Male War
Bride." 5.75 Sinbad Junior. 5.20
Crossroeds. 8.00 Day by Day. 6.45
Dick Barton—Special Agent. 10.30
Southern News Extra. 10.35 Ol' Red
Nair is Back. 11.35 Electric Theatrs
Show. 12.05 am Farm Progress.

TYNE TEES S.25 sm Tile Good Word followed by North East News Headlines. 9.30 Sill, Peggy, Royal and Friends, 10.00 Beach-combers. 10.25 Thomas and Sally. 11.15 Royal Maundy, 11.40 Oscar. 11.55 The Sweet Sugar Doughnut. 1.20 pm North East Naws and Lookeround. 2.25 Family. 3.20 Generation Scans. 3.35 Cartoon Tape. 3.50 Leasie. 5.15 University Challengs. 6.00 Nordera Life. 10.30 A Twist in the Tale. 12.15 am Epilogue.

ULSTER

10.15 am The Herbs. 10.25 Thomas
and Sally. 11.15 Royal Maundy. 11.40
Gecar. 11.55 The Sweet Sugar Doughout. 1.20 pm Lunchtime. 2.25 Keep
Up With Yoge. 2.55 The Friends of
Man. 4.18 Uister News Haddines. 6.00
Good Evening Uister. 10.30 Monday
Night. 10.40 Hawaii Five-0. 11.35 Bedtime.

9.25 am Survivel. 9.50 Godboy.
11.15 Royal Maundy. 11.40 Oscar. 11.55
Sweet: Sugar Doughnut. 1.20 pm
Report West Headlines. 1.25 Report
Wales Headlines. 1.25 Report
Wales Headlines. 5.15 The Underses
Advantures of Captain Namo. 5.29
Crossroads. 6.00 Report West. 6.22

YUKKSHIKE.

9.30 am Finands of Men. 10.00 Oscar.
10.15 The Nature of Things. 11.10 Clue
10.15 The Nature of Things. 11.10 Clue
10.15 The Nature of Things. 11.10 Clue
11.25 Princesses of Tomboso.
1.25 Report
Challenge. 8.00 Calender (Emley Moor
and Belmont editions). 10.30 Twist in
the Tale.

and the same of th

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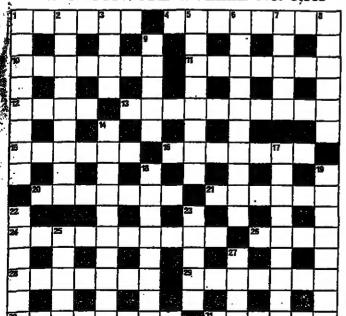
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Show (S). 9.00 Michael Aspel (S).
12.00 Mika-Alian (S). 3.00 pm Roger
Scott (S). 7.00 London Today (S).
7.30 Adrian Love's Open Line (S). 9.00
Nicky Herne's Your Mother Wouldn't
Like It (S). 11.00 Tony Mystt's Late
Show (S). 2.00 am Peter Young's
Night Flight (S).



ACROSS

I Island finds chemical firm in 1 Counterfeit diarsond as a cunning surroundings (6) 4 Plausible gambles about a O Girl has a fellow to tea, we

perhaps (7) 12 Knocks about the yard (4) 13 Prosperous, unlike Achilles

hear, but remains unyielding

.5 A girl to see in the French Riviera resort (6)

6 This house is underground but shelters a Lord Mayor 9 Extreme, so to speak (5) (7) 9 Extreme, so to speak (5)

national emblem (8)

(7)
11 Get together with a nice mob perhaps (7)
12 in the solution of the solu

meal (10) A college window (5) 8 Get horses when the river rises in the streets (6)

11.05 Tonight
11.45 Weather/Regional News
All Regions as BBC-1 except

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DOWN

2 Counterfeit glass, we hear, in which is drink (9) 3 It is baked-show intelli-

6 To make amends the committee and the writers had a

30 Listens always to gossip (7) approach from Iceland (10)
21 Boss takes ten to the work21 Ancient outer court where

5.05 John Craven's Newsround.
5.10 Blue Peter.
5.40 News (London and South-East only)
5.55 Nationwide
6.20 Nationwide
6.20 Nationwide
6.20 Question of Sport
7.20 The Rockford Files
8.10 The White Tribe of Africa
9.00 News
9.25 The Monday Film: "The Carey Treatment"
11.05 Tonight
11.45 Weather/Regional News
All Regions as BBC-1 except

at the following times:—
Wales—1.50.2.05 pm Pili Pala.
4.46-5.05 Bobol Bach. 5.55-6.20
Wales Today. 6.50-7.20 Heddiw.
11.45 News, Weather for Wales.
Scotland. 5.55-6.20 pm Reporting Scotland.
Northern Ireland. News, 5.55
Scene Around Six. 6.20-6.50 Land 'n' Larder. 11.45 News, Weather for Northern Ireland.
England—5.55-6.20 pm Look East (Norwich): Look North (Leeds, Manchester, Newcastle):

(Leeds, Manchester, Newcastle); Midlands Today (Birmingham);

Points West (Bristol); South Today (Southampton); Spotlight South West (Plymouth). BBC 2 10.30 am Multi-racial Britain.

11.00 Play School
2.30 pm Craft of the Potter
3.00 That's the Way the Money Goes 3.39 Delia Smith's Cookery Course 4.00 Modern Language Teaching
6.55 The Water Margin
7.40 In the Post
8.05 Mid-Evening News
8.15 Marti Caine

9.00 Monty Python's Flying Circus 9.30 The Body in Question 10.20 Arena

11.00 Late News 11.10 Cricket: Fourth Test (highlights)

LONDON 9.30 am The Shadow. 10.00 Lanigan's Rabbi. 11.35 Survival. Langan's Rabbi. 11.35 Survival.
12.00 The Wotsit From WhizzBang. 12.10 pm Daisy, Daisy,
12.30 The Cedar Tree. 1.00 News,
plus FT Index. 1.20 Thames
News. 1.30 About Britain. 2.00
After Noon Plus. 3.20 Raffles.
4.20 Clapperboard. 4.45 The

Lads. 5.15 Batman.

6.00 Thames at 6 6.35 Crossroads 7.00 The Ken Dodd Laughter 7.30 Coronation Street 8.00 Feet First 8.30 World in Action 9.00 Danger UXB 10.00 News

RADIO 1

(S) Stereophonic broadcast
5.00 am As Radio 2. 7.02 Dovs Lee
Travis. 9.00 Peter Powell. 11.31 Paul
Burnett. 2.00 pm Tony Blackburn. 4.00
Andy Peebles. 5.20 Newsbest. 5.45
Kid Jensem. 6.31 Stayio' Alive. 7.30
As Radio 2. 10.02 John Peel (S).
12.00-2.02 am: As Radio 2.
DADIO 7 27 Ancient outer court where trials are held (3, 6)
28 Prosaic, and avoids the high-way (10)
29 Prosaic, and avoids the high-way (10)
30 Espicy mark of authority (4)
31 Can maybe see mine adversaries (7)
32 Plant for underhand essayist (7)
33 Reviles the birds (5)
34 Quiet chime to be pleasing (6)
35 Reviles the birds (5)
36 Greek general takes to flight (8)
37 When tempers become thus, there may be an outburst (6)
38 Reviles the birds (5)
39 Plant for underhand essayist (8)
40 Greek general takes to flight (8)
41 When tempers become thus, there may be an outburst (6)
42 A quiet chime to be pleasing (6)
43 Reviles the birds (5)
44 Sports Desk (5) 4.30 Wanganers' (8)
44 Sports Desk (5) 4.47 John John (4)
45 Sports Desk (5) 4.50 Wanganers' (8)
46 Greek general takes to flight (8)
47 Dress up as an Archbishop (4)
48 Facion Bultetin and 8.45 Pause for Thought (8)
49 Plant for underhand essayist (6)
40 Greek general takes to flight (8)
40 Greek general takes to flight (8)
41 Dress up as an Archbishop (4)
42 Dress up as an Archbishop (4)
43 Facion (10)
44 Prosaic, and avoids the high-way (10)
44 Prosaic, and avoids the high-way (10)
45 Design from the Shetlands (10)
46 Spicy mark of authority (4)
49 Demon Hal restored to the country of his birth (8)
49 Plant for underhand essayist (6)
40 Greek general takes to flight (8)
40 Greek general takes to flight (8)
41 Plant for underhand essayist (6)
42 Pause for Thought (8)
43 Facion Bultetin and 8.45 Pause for Thought (8)
44 Plant for underhand essayist (7)
45 Plant for underhand essayist (8)
46 Plant for underhand essayist (7)
46 Greek general takes to flight (8)
47 Cal Wanganers' (8)
48 Facion Quantity (10)
49 Plant for underhand essayist (10)
40 Greek general takes to flight (10)
40 Greek general takes to flight (10)
41 Plant for underhand essayist (10)
42 A quiet chime to be pleasing (10)
42 A quiet chime to be pleasing (10)
43 Facion Bultetin and 8.5 Pause for Thought (8)
48 Tracing Bultetin and 8.5 Pause for Thought (8)
49 Plant for underhand essayist (10)
40 John fo

GRAMPIAN

9.25 am First Thing. 9.30 Terzeh.
10.25 Thomas and Sally. 11.15 Royel.
Maundy. 11.40 Oscar. 11.55 The Sweet
Sugar Doughnut. 1.20 pm Grampian
News Headlines. 5.15 University
Challenge. 6.00 Grampian Today. 5.10
The Electric Theatra Show. 10.30
Religions. 10.35 The Monday First:
'The Hot Rock.' 12.25 am Grampian
Lete Night Headlines. GRANADA GRANADA

9.30 am Sesame Street. 10.25
Survival. 10.50 Valley of the Oinoseurs.
11.10 Lock at Uie. 11.20 Untimed World. 11.45 A Handlul of Songs.
1.20 pm Dodo. 2.25 Monday Metines:
"McNaughton's Daugher. 5.10 What's New. 5.15 Crossroads. 6.00 Granads Reports. 6.30 Happy Days. 10.30 Mystery Movie: McCloud.

The Law Game. 10.30 Star Sound. 11.22
Brian Matthew introduces Round Midnight including 12.00 News. 2.002.02 am News Summery.
RADIO 3
4.55-7.05 am Cricket: Fourth Testinative of England. 7.00-7.05 News.
7.05 Westher. 7.08 Ovarture (S). 8.00
News. 8.05 Morming Concert (S). 8.00
News. 8.05 Morming Concert (S). 8.00
News. 9.05 This Wesk's Composer;
Henry Parcell (S). 10.00 Talking About Music. (S). 10.30 Saint-Saens. (S).
10.30 King a Lynn Festural 1978 (S).
11.45 BBC Northern Symphony Orchestra (S). 1.00 pm. News. 1.05
BBC Lunchime Concert (S). 2.00 Music. (S). 3.35 New Records (S). 5.15
Bendatand (S). 5.45 Homeward Bounds (S). 5.35 Homeward Bounds (S). 5.35 Homeward Bounds (S). 5.30 News. 6.35 At Home (S).
7.30 EBU Concert from Vienna, part 7: (S). 8.30 News. 6.35 At Home (S).
15.05 Rimsky-Korsekov (S). 10.30 The Not So Square Mile (S). 11.25 Jazz-je Britain (S). 11.55-12.00 News.
RADIO 4
5.00 am News Briefing. 8.10 Farming

Week including 6.25 Shipping Iorecast 6.30 Today: Magazina, including 6.45 Player for the Day, 7.00, 8.00 Today: News, 7.30, 8.30 News Head-lines, 7.45 Thought for the Day, 8.45; Can't Stay Long, 9.00 News, 9.05 Start the Week with Richard Baker. 10.00 News, 10.05 Wildlife, 10.30 Daily Service, 16.45 Morning Story, 11.00 Dame Ethel Smyth, composer (profile), 11.45 Listen with Mother, 12.00 News, 12.02 Pm You and Yours, 12.27 Quote, Unquote (S), 12.55 Weether, programme news, 1.00 The World at One, 1.40 The Archers, 1.05 Shipping Jorecast, 2.08 News, 2.02 Woman's Hour, 3.00 News, 2.02 Woman's Hour, 3.00 News, 7.05 Mispaing Jorecast, 2.08 Weether; programme news, 8.00 News, 7.05 The Archers, 7.20 From our Own Correspondent, 7.45 The Tor Sande Experience (S), 1.15 The Susan Person, 9.30 Kateldoscope, 9.59 Weether, 10.00 The World Toright, 10.30 The Great Divide, 11.00 A Book at Beddime, 11.15 The Fineficial World Toright, 10.30 News, 1.15 The Fineficial World Toright, 10.30 News, 1.15 The Fineficial World Toright, 10.30 The Great Divide, 11.00 Unforgettables, 12.00 News, wa Briefing. 6.10 Farming

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5.00 London Live. 12.03 pm Call In. 2.03 206 Showcass. 4.03 Rome Rim. 5.10 Look, Step, Listen. 7.30 Slack Londoners. 8.30 Bessithrough. 10.03 Late Right London. From 12.00—As Radio 2

Reports (continues). 8.00 After Eight.

Ronnie Scott's

Mary 5 1879

Cedar Walton

by KEVIN HENRIQUES

initial appearance conditioned the ear to expect something extra-special this time but in truth the latest Walton quartet and making her Scott club debut is not as impressive overall. is an attractive young singer Previously its collective attack from New York, Pamela was hefty. Now it sounds re. Knowles, another of those vocal was hefty. Now it sounds reduced and not so cohesive. Also there was more exhibitation then. Though tenor-saxist Bob Berg is a strong, Coltrane-influenced player with a hard, cutting edge to his tone, he lacks the huge authority of George Stephen Sondielm (no. not Coleman who was here in 1976. "Send in the clowns"). All too The absence of bassist Sam obvious nervousness during her Jones is also a loss. Newcomer Tommy Dumas, with a curious, the voice quality in several personally tailored accustic base places but by the end of her with the sides cut off does not second session she had recovered Tommy Dimas, with a curious, obtain a very clean line via his

It is exactly three years since Walton thoughtfully explored the Cedar Walton quartet first the chordal possibilities of played at Romie Scott's Then several of his own compositions was enthusiastically and and other numbers, notably "I deservedly acclaimed as one of didn't know what time it was," deservedly acclaimed as one of didn't know what time it was," the most refreshing and hard with a deep, searching penetra-driving modern fazz units to tion. As an accompanist his have appeared at the club simple accents (behind hasse Almost inevitably, there have solos in particular) were impecbeen personnel thanges since cably adept. Driumner Higgins then and the Walton group alone is worth the price of which opened on Tuesday (and admission. His dynamic shading which remains at Scott's until —watch him whish his brushes Jamary 13) contains only two of the original 1976 line-up; closed hi-hat—and time-keeping Walton himself on piano and are just two facets of his impos-Walton himself on piano and are just two facets of his Billy Higgins on drums. ing skill guaranteed to Maybe the excitement of that listeners open-mouthed. are just two facets of his imposing skill guaranteed to leave

Opposite the main attraction and making her Scott club debut specialists who invest quality songs with a strong jazz flavour. Powerfully voiced with a big numbers from the lusty "Dr Jazz" to the sophisticated Stephen Soudieim (no. not "Send in the clowns"). All too opening set on Tresday affected sufficiently to confidently deliver amplifier. The result is a heavier the hertic lyrics to Miles "bottom" to the music. Devis's "Foor" Yet to formulate playing of the leader and late a distinctive style of her Billy Higgins stole the attention own Pam Knowles' progress on Tuesday though. As a soloist will be worth watching closely.

Elizabeth Hall

Marius May

by NICHOLAS KENYON

possessing title for a concert able vigour that a string broke series, and (as Dominic Gill in the first movement; May's pointed out on Saturday) this recovery was swift and efficient year's season of chamber music Two technical points worried promoted by the agents Harri- me continuously. One (perhaps son/Parrott and Ingpen and a fault of instrument rather than Williams: in: the Elizabeth player) was the pervasie uneven-Hall contains little unusual in ness of timbre across the the way of Slavonic music, strings a move to a higher There is in the programme position on the lower strings book an essay by Max Harrison it which (while scandalously over even May's flighly musical looking the 17th and 18th colouring could not disguise. century repertoire) outlines a And two, May's bursts of intenfascinating programme for a sity too often diafigured the Slav festival: sonatas by deciracy and balance of the Dussek, symphonies by Vorisek, line. Beethoven's C major operas by Dargomyzhsky. Sonata Op 102 suffered from this orchestral music by Kalimikoff as its start, but was gherwise the best performance of the stall to the run-through of favourite pieces by house for the ferror expendicities and at all to the run-through of favourite pieces by house artists which is (albeit pleasantly) occupying the Eliza-

beth Hall during January we might retitle the Not bess as to obtrude all too Slavishly Slav series was a frequently we are surely meant recital by the formidable young to hear the code of the slow British cellist Marius May, with movement in Schubert's Arpegthe American prizewinner in the 1973 Leeds Piano Competition work which never management of its first live up the promise of its first eight bars). Sheppard's coolness in the Beethoven, right way round. The Slav con-tribution, Janácek's Fairy Tale, was dispatched with a beautiful blend of wistfulness and passion. though there was not the absolute poise in the playing which did so with an icy brilliance would have made it an unbeat, which seemed at odds with would have made it an unbeat which seemed at odds with able performance Chopin's Marius May's splendidly forth-rambling G minor Sonata was right ardour.

and the same of the same

LASSIFIED /ENTISEMEN

RATES

"Mainly Slav" is an unpre- stracked with such unquench

National clarinet competition for young people

ever national clarinet competi-Sinfonia Orchestra and the area available on January 20, from

for the fierce eccentricities and quirkiness of the final Allegro.

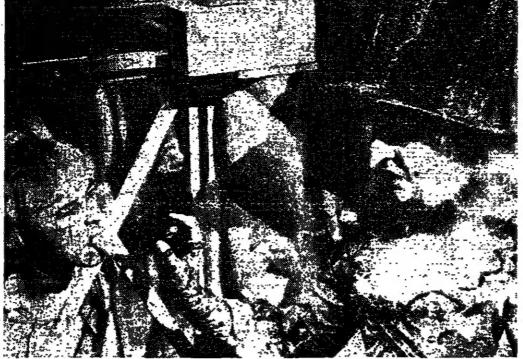
At the piano, Craig Sheppard was reticent to a fault, making Friday's contribution to what such a point of his unobtrusivegione Sonata (for it is one of where he was admirably sharp and pointed; but in the Janacek he sounded detached, and in the Chopin, where he finally emerged from the shadows; he

What is said to be the first. Tyne, and for the six finalists, a second stage on May 16 during tion for young people is to be Ashington Festival in Northumbeld in the spring by Ashington berland.

The chairman of the jury will people between the ages of 17 be Denis Mattheward other and 23 who were born or are members will include Sidney living in Great Britain, the come Fell, Timothy Reynish, David petition is offering prize-money. Haslam and Graham Evans, of £300 plus the chance of Applications for entry and f engagements with the Northern details of the competition are

Applications for entry and full Sinfolia Orchestra and the area available on January 20, 11000, arts association for parts of Ashington Festival c/o Leisure Northumberland.

The competition will be held Wansbeck District Council, in two parts: preliminary stage Wansbeck Square, Ashington April 16, 17 and 18 at the Sin Northumberland, Closing date



Leeds Grand Theatre

Hansel and Gretel

the tale, characterised in clichés, spotlight. a piece of kitsch, aimed not so

room and a little garden. The but suggesting strange shapes of the Leeds Grand Theatre like real children. Joan Clarkson

The case against Hansel and last Friday; and Miss Howard sketches their mother as a good Gretel is easily made out-it has was rewarded with an woman exhausted and made Gretel is easily made out—it has was rewarded with an would cantankerous by poverty, and no been found sentimental, sub- enthusiastic torrent of boos doubt by the feckless good Wagnerian, musically too when she appeared for her humour of her husband (John elaborate for the simplicity of curtain-call, sparling in a green Rawnsley). Under David Lloyd-Jones, the

Her pretty, grey crinoline much at German children as and powdered wig perhaps their nostalgic elders. Yet it helped to allay fears; lacking has gone on and on, and in a crone's rags, she could not be production as sympathetic as the that bad. However, this was new one for English National one of the few mildly jarring Opera North the work's qualities notes. If the conventions are shine strongly through.

Adam Pollock has designed ing Sandman (Susan Lees) in being followed, with a charma neat, traditional set. The dressing gown and night-cap, broom makers' cottage is plain, with a delightful angel chorus split between their humble from local Leeds schools, with the parents as pipe-puffing children settle to sleep in an peasant and toiling wife, then Urwald, a good deal less to make the Witch quite such a frightening than Disney's for creature of fantasy breaks the Snow White's nocturnal flight, Grimm Brothers' atmosphere. Less seriously, casting the Dew and half-covered fears. The Fairy (Iris Saunders) as a Witch's cottage is a pretty, painter's mate does the same. almost oriental conceit, with But Patrick Libby's pro-But Patrick Libby's pro-Hansel's cage a kiosk like a duction is otherwise clear and

Witch herself emerges, Ann moving fluently. The scenes, Howard's flashing eye and when the children are dodging Howard's flashing eye and when the children are dodging plucking hands and sinister the Witch's clutches are wittily relish of her music include a managed; and Hansel and Gretelcomfortingly comic tinge. Not themselves, (Claire Powell and the youngest member of the Elizabeth Gale) sing lucidly and audience had to be taken out have studied to move and act

score becomes much less Wagnerian than its reputation. Certainly, there are strokes of Wagner. There is a mutter from the Rhinegold giants in the forest and the Lohengrin prelude violins appear just before the Dream Pantomime, which perhaps has a touch of the Good Friday music in it (Humperdinck, after all, actually composed some scene-change music for the first performance of Parsiful). But the handling of motive is not really Wagnerian, and the actual use of instruments has a delicacy all its own. Humperdinck was really attempting to escape from Wagner's looming presence back into an earlier tradition of fairy-tale opera. He was not alone in this (though as far prop for Oberon; and when the sensible and keeps everything as England is concerned, he might have been) but he was the most successful of those composers tried. His score, however modest its subject, earns appreciation of its individuality and skill; and this the orchestra fully gave it.

Festival Hall

Terabust, Schaufuss, Connor, Jefferies

cracker, and Laura Connor, Stephen Jefferies and Graham Fletcher in Fille at the Opera Terabust's characterisation of

Louise, heroine of The Nut-than the class-room) crucker, is a portrait of a jeune derful gift for dance. fille bien élevée of quiet charm. Her dancing shares something of this same decorum, touched with a youthful lyricism in the snow-scene duet, and most delicately stated in the last act grand pas de deux (though one day Festival will come to its senses and do decent homage to Ivanov by restoring the glorious original text). Terabust gave the gentlest account I have seen of this passage; soft in grain, muted in accept, it was dancing hushed to a pianissimo—rather like a celebrated performance by Cortot in which a Chopin nocturne seemed to have no bar-lines, dynamics were almost lost in a seamless flow of dance.

From Peter Schaufuss came the beautifully poised bravura we have come to expect from this outstanding artist. The characterisation calls for a certain shyness, which Schaufuss assumes without seeming nambypamby. In the solos, the young

double turns in the air which land in a clean fifth position; pirouettes, cabrioles set out with academic exactitude, but -all fired and turned into the language of the theatre (rather than the class-room) by a won-

It is time that Schaufuss was seen in London in more major roles, which will stretch him as artist and virtuoso: his promised staging of La Sylphide for Festival, and his appearances with the National Ballet of Canada at Covent Garden later this summer, are to be anticipated with pleasure.

The attraction of Saturday matinée's Fille, at Covent Garden, was of a performance of the liveliest dramatic power. The story might have been told for the first time, so fresh and attractive were the interpretations of Laura Connor and Stephen Jefferies as the lovers. and of Graham Fletcher as Alain.

Connor's spontaneity of playing, her winning delight in dancing which informs every-thing she does—we have but to April 10, 17 and 18 at the Sin- Northumberland. Closing date man's truer personality shines Gathering — make her a most Hunchback of Notre Fille.

fonia Centre in Newcastle apon for applications is March 1. out with splendid physical attractive Lise. And on this CLEMENT CRIS waltz sextet in Dances at a

ing the spirit of either character or choreography. His Colas is exemplary, combining sincerity and fun - a fun that springs from the young farmer's perso-nality and the dramatic situation, without seeming arbitrarily mposed on the text. The opening scene with Lise - Colas enjoying every snatched kiss; showing off; mooney-eyed with love-was the happiest augury

for a happy performance. And in Graham Fletcher we had an Alain impossible to fault. The most Shakespearean Puck in The Dream, the loval sensitive Bratfisch of Mayerling. Fletcher brings to each of his roles a clear imaginative under-standing, and his Alain was portrait of innocent good mour, with excited high spirits bubbling through his buoyant dancing. Grand per-formances; a grand afternoon.

As an apologetic post-script, I must record that it was Graham Fletcher and not Paul Benson who gave so entertaining an account of the Notary's clerk on Thursday: but no less entertaining was Benson's view of the recall her lovely daring in the role on Saturday afternoon, waltz sextet in Dances at a apparently a fugitive from The

Coliseum

Tosca by elizabeth forbes

but the current revival of Puccini's opera by ENO at the Coliseum can best be described as tasteful. This is not to imply that the performance is pallid or lacking in guts; on the contrary, there is plenty of full-blooded singing and playing. But there is also delicacy and transparency of texture in those many portions of the score where, as in all Puccini's scores. such refinements are invited. For instance the march accompanying the arrival of Cavaradossi and the firing squad on to the platform of Castel Sant' Angelo begins really softly. allowing an inexorable cres-cendo to be built up right through to the execution itself.

Then Ian Reid, who conducts, hapes the introduction "Recondita armonia," Cavaradossi's first-act aria, with special sensitivity. Geoffrey Pogson, making his debut with the company on Friday night, sings the piece in a reflective, elegiac style very different from the anguished and passionate manner with which he recalls Tosca's kisses and caresses in the last act. His voice, keenly focused and easily produced, has an exciting ring to it at the top—he is a welcome addition to ENO's tenor roster. Dramatically Mr. Pogson is more convincing as artist-lover than as dedicated Republican, but then so are most inter-preters of the role; Pucccini deals far more persuasively with human relationships than with political issues,

As Tosca. Ava June is particularly effective in the scene with Cavaradossi in Sant' Andrea; she uses her jealously as a weapon in the flirtatious skirmishes with her lover, while the teasing tenderness of the exchanges between the two carries absolute conviction. Miss June can also rise to the moments of high drama; she does not need to rush around the stage or convey the depths of her suffering during the torture of Cavaradossi or to make plain her disgust and hatred for Scarpia-it is all done with the voice. She sings "Vissi d'arte " very simply, phrasing the subsequent appeal to Scarpia's pity with touching humility. The one ingredient lacking in her performance is impulsiveness: the

Tosca and good taste may reasoning intelligence that procession. Otherwise any rough appear a contradiction in terms, makes her such a fine edges in John Blatchley's promakes her such a fine edges in John Blatchley's pro-Marschallin is out of place in duction have been smoothed Tosca's emotional character.

ing in menace, radiates a posisake that is a very adequate character sketching - while Te Deum, that is the fault of the distracting entrance, from share to the effectiveness of the a stage box, of the Cardinal's performance.

down satisfactorily. The minor Neil Howlett's firmly-sung roles are well taken-the Scarpia, though somewhat lack- credulous and superstitious Sacristan of Harold Blackburn tive relish in cruelty for its own is a small masterpiece of substitute. If he makes less chorus and orchestra despite, in impression than he might in the the former case, depleted numbers, contribute an appreciable



Ava June and Geoffrey Pogson

Purcell Room

Webern Festival—5

A fine clutch of dance performances at the week's end fuss is excellently schooled—
formances at the week's end fuss is excellently schooled—
lightened our frozen lives, with impeccable finish. It is a rare
lightened our frozen lives, with joy to see steps of virtuosity

Frieghaffa Terabust and Peter

Terabust and Peter

Terabust and Decause Schauoccasion she had the advantage
of Stephen Jefferies as partner.
Jefferies is, I suppose, the most
gifted dance-actor we have, an
artist who brings each of his
order to the two composers the pair of songs finally rejection on the pair of songs finally rejection of the pair of the pair of songs finally rejection of the pair of the pai basic Webern theme with Schubert part-songs for un-

accompanied male voices. Partsong was pever Schubert's most rewarding field; but the Sinfonietta unearthed some worthy gems nonetheless—a splendid "Die Nachtingall" of 1821, a wonderfully luminous late set-ting of Schober's "Mondens-chein," and a jolly "Trinklied" that could have come straight out of Carmina Burana,

It was specially intriguing once again to hear the distillation of influences in the earliest Webern: in his first known work. two brief pieces for cello and piano (the cello was Webern's own instrument), dating from 1899 when Webern was only 14, living crystal. shot through with a delicate perfume of Strauss, Skryabin and Saint-Saens; and in two teenage songs from 1900 and 1902, "Wolkennacht" and "Hochsoma duet for soprano and tenor, in strict canon — tonal fore-taste of one of Webern's favourite later atonal devices.

The ten Stefan George songs op. 3 and 4 were originally conceived as two sets of seven CLEMENT CRISP songs, differently ordered, and

The fifth concert of the it was in this earlier form that in its ensemble and pacing, but London Sinfonietta's Schubert/ Phylis Bryn-Julson sang them thrown off with nice spirit and Webern series on Friday even-here, including in each sequence style.

particular ties a neater knot at the end of op. 3 than "Im Morgentaun," and the two rejected songs of the second set are surely of slightly lesser worth); but Miss Bryn-Julson delivered both with impeccable roundness. warming (as she often does) a little slowly, but finally achieving in the last seven songs the simplest finest instrumental detachment and calm purity of

Of the instrumental works, we heard the two sets of tiny fragments which frame Webern's "m'niature" period from 1910 to 1914, the Four Violin Pieces op, 7 and the Three Little Pieces for cello op. 11 — each one a 1899 when Webern was only 14, living crystal, exquisitely remarkably accomplished essays polished, perfectly formed, and on this occasion, in fine performances by None Liddell and Christopher van Kampen with John Constable, The String Trio op. 20 was another work given mernacht." the first particularly in its earliest "unanthentir" of unmistakably Wolfian bitter-form, here with its first two sweet ambiguity, and the second, movements reversed, and with the addition of a reconstructed finale - interesting, but odd, uneasy effect. The well-known Quartet op. 22 for violin, was played straight and unaltered: an enthusiastic performance, a shade less assured



RUGBY UNION BY PETER ROBBINS

The Welsh formula for success

discover reasons for their per-fly-half, a player with North-sistent failure over the years ampton, 11 years with the one is bound to ask why Wales one is orund to ask why wates Recreation, during which time have been so very successful he had worked extensively with in the same period. -

That success has been hard a passion for coaching.

arned and I suspect that the No-one could tell him what to earned and I suspect that the certainly been badly affected. committee.

An important year in Welsh As organiser, he realised that state of the game in Wales

the appointment of a coaching Wales have a small caucus of

Williams's credentials were should be identified with the have the likes of, Mervyn scouting system.

Central Council for Physical the Rugby Foetball Union, and

English attitude to the Weish do because there had never has not changed since my day been an appointment like his.

—a grudging respect tinged, This freedom gave him the perhaps, with a little envy. chance to operate in all spheres What may now exist is a sense of the game and he was involved of inferiority in the English in setting up the Welsh Cup. camp, where morale has and still sits on the competitions

rugby was 1964, when Wales no one can coach 30 players at lost to South Africa in Durban once effectively and so every with what players. by 24-3. It was considered a coach to the team has been national disaster and at the assisted by Williams and Welsh AGM there as a pro-latterly Malcolm Lewis. John posal to set up a committee to Dawes called in Terry Cobner make recommendations on the for some specialised forward coaching against New Zealand Out of that committee came this season, but the point is that

organiser, Ray Williams, in men who decide poilcy.

1967. His primary function Both the Rugby Football was to reorganise the coaching Union and the Welsh Rugby structure of the game in Wales Football Union set up advisory and so produce well-dualified panels as long ago as 1964, but be blessed with some of the centres. The big clubs see the Welsh decided that coaching greatest players ever seen. To nothing wrong in a football-type

there is no doubt that Welsh thinking.

approach has been apparent but it must be said that at times the rugby has been numbingly unenterprising. However, it has and the greatness of certain produced success for a nation players. To really grasp the root accustomed to success.

demions on how to play and the community.

the opening up of the game was there for the taking given the manna to the Welsh spirit and talent, encouragement and instinct for attack. That has effort. largely disappeared, or at Talent in Wales is rarely

evolution.

AS ENGLANDS struggle to impeccable—a Welsh trialist national team. Although Wil- Davies, Barry John Gareth discover reasons for their per- fly-half, a player with North- liams is reticent about his part, Edwards, Phil Bennett, Gerald Davies, and J. P. R. Williams as play over the past decade has contemporaries was a unique been largely influenced by his gift. Players of that calibre did hinking.

not need coaching, all they
A more thorough and uniform needed was the ball and some organisation. But the Welsh success goes

beyond organisation, coaching cause one has to look at the There are several reasons for place of rugby in Welsh life. It Wales' success and the first is unquestionably a sub-culture, certainly is the thorough organi- and the ambition of the young sation they have set up for the players reflects the important establishment of patterns and position the game occupies in

The Welsh attitude to rugby The law changes in the mid- is the same as their attitude to 1960s helped Wales more than education. Like education, it is most countries. She had had a way of getting on, a passport her share of great players, but to a wider, fuller life, that is

least been suppressed but never- missed because of the closeness theless it was a part of the of the society, and there is a natural progression from the Wales were also fortunate to small clubs to the bigger BOXING BY TREVOR BAILEY

Champ from the welding shop

day coincided with the afternoon tea break. A small group from a truck assembly line were enjoying the rest. There was nothing unusual

about the talk or dress of the workers I met, except that the one coloured member happened to be the reigning westerweight champion of Europe and Great strangely almost Britain: unknown Henry Rhiney.

Seeing him as just another, popular member of the workforce, I found it difficult to believe that this was the man who knocked out Josef Pachler with a copybook right uppercut to take the European title in December and has been British champion for the past two years.

Rhiney is softly spoken, shy, completely unmarked, shrewd and genuinely modest. For nearly all his professional career he has worked full-time in the factory, where he has never asked for or received special

favours. Although his training has had to be done in spare time, his failed to make it in the ring, as well. he could still support his wife and children. Unlike so many boxers, for whom money is "easy come.

easy go," Henry has learned to appreciate real values and the need to provide for the future of his family, which is why he is still earning £76 a week as a spot welder before he meets Dave Green to defend the European title at the Albert Hall on January 23, for which he will receive the largest purse of his

Henry was born in Montego Bay and brought to England by his father when aged 15. The determination that has proved so vital throughout his boxing career enabled him to acclimatise himself faster than most. Like so many West Indians. Henry was a natural games player.

He stumbled into boxing by chance when, as a teenager, he went to a Luton youth club. There he met Jack Lindsay, the hoxing coach. Typically, he says:

the dream of every coach: a favourite punch.

pupil with exceptional talent. He is a highly proficient. win through Apart from Henry's balance

impressed Jack in the early days and convinced him that he had found somebody special was the boy's eye for distance and his ability to learn combinations of

Henry eventually turned professional and was fortunate to have as manager John Barclay. who made sure that he was not over-matched. Initially he did not make a great impression. In spite of his technical proficiency he lacked the charisma of a Dave Green

way. He is 27 and has had

"Jack taught me everything I far more ringeraft than most and to his race.

MY ARRIVAL at the Chrysler work has provided independence known about boxing" — and, of his contemporaries, has factory, Dunstable, last Thurs—and the knowledge that, if he one suspects, much about life developed an exceptionally sound defensive technique and For Jack Henry represented has a classical left-hand jab, his

> who was also prepared to work thoroughly professional boxer, and train hard and eventually to able to out-box, out-manoeuvre and out-think his opponent. Significantly, he has won three and very fast reactions, what of his four successive championship fights by a knock-out.

Whatever the outcome between the bustling Green and the counter-punching of the elegant Rhiney, it should provide an outstanding contest. If Henry wins, his manager will be able to arrange for him either to defend his European title in France for another £20,000 or to take Green's place in a shot for the world championship.

In an era when it is fashion-

able to say that a mean streak is essential for a sporting ave Green. champion, and where letting For Henry it was no quick the end justify the means is accepted, it is most satisfying to an honest, non-swearing, un-

more than 50 fights as a pro- find a new boxing hero, who is The long apprenticeship has assuming and hard-working meant that Henry has absorbed family man, a credit to boxing

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Monday January 8 1979

The best of a bad job

has ended in a rare spirit of emerging SALT II agreement euphoria, not to say unanimity.

All four leaders were agreed on the usefulness of their contents of the implications of America's recognition of China. versations, and above all on the friendly and trusting nature of their relationships. They were the international community, while insisting that this should not and could not be at the expense of the Soviet Union; in particular, they endorsed the conclusion of the second round Soviet-American negotiations on strategic arms limitations (SALT II), and recommended its ratification by the U.S. Senate. All in all, the event represents a significant success for President Jimmy

It is an open secret that the gerous for an agreement to be SALT II negotiations have given rise to serious miseivines on both sides of the Atlantic. on the ground that it might entrench a growing Soviet superiority in strategic weapons, long been the only substantive against a background of a steady build-up of Soviet mili- two super-powers. It is difficult tary might at all levels. Strate- to see any legitimate reason for gle parity is notoriously difficult the rapid expansion of Soviet tot estimate, given the qualita- military power, or to rule out tive and geographic differences of the two sides, but there are strategic experts who fear that the new agreement could open up the possibility of a Soviet first strike against the U.S. In Europe there are also fears that the Soviet-American negotiations make too little allowance for European interests, to some extent in the current round, and even more in the next round (SALT III), which will more directly affect the European

Among other things, Europeans have been worried that tthe U.S. might bind itself not to provide them with advanced military technology, including that concerned with the cruise missile. As a result of these fears, the U.S. Administration has been faced with the possibility that it might be able to conclude an agreement on SALT II with Moscow, but not secure ratification in the U.S.

"Frank and open"

leaders did not mince words in

GUADELOUPE mini- President Carter was able to summit of France, Germany, persuade his three colleagues Britain and the United States that their assessment of the

There can be little doubt that the Soviet Union has viewed China's rapid development of united in their welcome to a more international posture, and in particular its explicit the international community of the i traditionally opposed to the Soviet Union (notably those in Western Europe), with the gravest concern.
While there remains valid

reasons for questioning whether

the SALT II agreement will really strengthen the security of the West, rather than reinforce the danger of Soviet superiority, it could be dangerous for the negotiations to break down at this stage, and perhaps even more danrejected by the Senate. Detente has long been a vogue word to describe East-West relations, but the fact remains that the SALT negotiations are and have topic of intercourse between the long-standing suspicions of Moscow's strategic intentions. But the U.S. can ill afford at this juncture any breakdown in the SALT dialogue which might have the effect of reinforcing Moscow's suspicions that it risked being the victim of a tacit conspiracy betwee America, Europe and China.

Indo-China

It might have been better if the U.S. had seemed likely to conclude a more balanced SALT II agreement with Moscow, and if it had signed and ratified such a treaty before recognising China. Such a neat ordering of events was almost certainly rendered impossible by China's impatience to modernise its economy, and by America's impatience to benefit from this

What is needed now is a broader strategic dialogue be-tween the United States, the Soviet Union and China, beginning with the potentially explosive situation in south-east To judge from Mr. J. Cal- Asia. No one can be sure how laghan's remarks at the con- far the Vietnamese intend to clusion of the Guadeloupe go in their invasion of Cam-summit, when he said that their bodia, but there is an undoubted discussions had been "frank, danger that the conflict could direct and open." It may be escalate into a wider war by inferred that the European proxy, with the Chinese supporting the Cambodians and the expressing their anxieties. But Soviet Union underpinning their it may also be assumed that recent alliance with Vietnam.

Firm line for town halls

IT WAS the chance of the tim-ing of the annual pay round that shown no sign of wanting to put the local authority manual bite. workers at the head of the line of major public sector wage claims when the Government's 5 per cent pay policy collapsed. It was a fortunate one for Ministers, for if there is a major public sector claim they might have opted to fight it is the 40 per cent demand from the town hall workers.

Two-edged

The union side are planning a one-day national stoppage later in the month, to be followed by a series of guerrilla strikes in different parts of the country. Uncollected refuse and schools closed for lack of heating will inconvenience the public but town hall workers lack the industrial muscle of the miners or power station workers.

Efforts are being made to mobilise a united front with the hospital ancillary and water and sewerage workers, who are conducting parallel negotiations. But making life doubly difficult for the public can be a twoedged weapon, and Ministers' resolve will have been strengthened by the knowledge that behind the manual workers will come other major groups in the public sector, such as the teachers and civil servants.

There has been talk of devising some formula based upon an as-yet undefined comparability study for public service workers. But the furthest Ministers would probably want to go in this direction would be to attach a promise of comparability at some future date to an immediate settlement broadly in keeping with their 5 per cent guideline.

Even then they would be well advised to avoid a formula as hard and fast as the one granted to the Gremen last year which guaranteed them for all time a particular relationship to average manual earnings in the who has been campaigning for Mr. Alan Fisher of the National sector.

For the moment the Government can afford to bide its time. while the local authority asso ciations conduct the battle on its behalf. All but one—the London Boroughs Associationare now Conservative-controlled and the employers' stand has been additionally strengthened by the discipline of the cash limit on the rate support grant. This was set for 1979-80 on

the assumption of a 5 per cent pay limit. It is true the usual undertaking was given about re-viewing the limit in the light of changes in Government policy or substantially higher cost trends. But when the cash limit comes up for review in November the general election will have taken place and local councils will have bad to fix their budgetsand their rate calls—well before then in complete uncertainty as to which Ministers they will be dealing with then or what their attitude will be to revising the

Lunited crop

Local councils thus risk having to put the full cost of any settlement in excess of 5 per upon ratepayers—apart that is, from any cushion which may be afforded by their cash balances which for most councils are not lush. This discipline may be somewhat weakened in a year, like 1979, which has only a limited crop of local elections. The large rates increases which some inner London boroughs have been nected with the fact that these councils got their elections over last May and will not have to face the electorate again until

If the Government is determined to make a stand against inflationary pay settlements, it should announce that it will not increase the cash limit or average manual earnings in the the rate support grant if it is private sector. This could still in power in November. Cash possibly interest union leaders limits in the public sector are like Mr. David Busnett of the the nearest available substitutes General and Municipal Workers for the market disciplines which create the nexus between excesa more structured approach to sive pay increases and less public sector pay bargaining, but employment in the private

HE outlook for British trade in Iran is deteriorat-ing daily. Last week the Iranian Government suspended further work on a military-industrial complex at Isfahan, which had promised to be the UK's largest contract in Iran with an ultimate cost of £750m to £800m. Several other major contracts hang in the balance. Aiready most companies appear to have brought home a large proportion of their expatriate

The crisis has come just at the moment when trade with Iran was beginning to make a contribution to the British balance of payments. All through this decade the UK has been in deficit in its trade with Iran, reaching a trough in 1976 when British exports carried just half the value of imports -overwhelmingly oil. then, oil imports have fallen sharply as supplies from the North Sea have increased. And in the first 11 months of last year, the steady rise in UK exports to Iran brought a visible surplus of nearly £200m.

Now the level of oil imports from Iran has collapsed. And it seems certain that, for the time being at least, export volumes will do the same.

British sales to Iran last year mounted to about £ibn, out of total export figure of around £37bn, As a market for British exports, it was roughly equal in quantitative terms to that of a small European country like Denmark or of a major former colony such as South Africa, Canada or Australia. UK sales to Iran have equalled those to Saudi Arabia, and have recently compared with exports to Nigeria of roughly £1bn and to Japan of about £ibn. It has therefore joined the top tier of British export customers outside

Although it describes the current position as "very un-certain," the Export Credit Guarantee Department has not yet seen any upsurge in claims from UK exporters for non-payment. The department is keeping its credit limits open. and new business with Iran is still being done under these limits. But for longer term cover—two to five years, for instance—the ECGD is now adopting a wait and see approach. For individual UK companies,

the risks tend to be smaller than those faced by some U.S. and German groups—simply because the latter have been much more successful in attracting Iranian order, which the company hopes business. In the first half of to resume "when conditions last year West German exports" be mit " to Iran exceeded £800m, and one company-Kraftwerk Union British Leyland) to I an last Iran is an important but by no -was establishing an expatriate staff some 3,000 strong, to work on two nuclear power stations. It is too soon to say whether payments from Iran are in trucks and buses from UK kits, general becoming more erratic than they have often tended to be already. But the breakdown of supplies and services—particularly at the ports—has already brought a great deal of UK business to a halt. Inch-cape, which is the Lloyd's representative at all Iran's ports, says

that by and large exporters to

the country have stopped send-

toll of British exports BY FINANCIAL TIMES REPORTERS 1.200 **IMPORTS FROM** IRAN

EXPORTS TO 300 IRAN

future of some very large military equipment deals with Iran. These include a £400m Tracked-Rapier anti-aircraft Tracked-Rapler anti-aircraft missile contract held by British Aerospace's Dynamics Group; a £500m-plus contract with the Ministry of Defence's Royal Ordnance Factories to build Chieftain tanks; and a £50m order for four support vessels

'76 '77

"First 11 months

which is under way at British Shipbuilders. So far, work is proceeding to schedule and payments are coming through on time. But as a result of the unrest, it is reported that the Tracked-Rapier will now be built entirely in the UK and nor partly in Iran. And it is open to question whether the Chieftain contract will be taken

> payer at least as hard as the shareholders of the sub-contractors involved. For instance, Rolls - Royce Motors is heavily involved in the tank contract, with an order to supply some 1,200 V12 engines. But it is believed that a substantial proportion of the development. costs together with the bulk of the capital employed in the pro-

> Apart from defence sales, means crucial market for a wide

(First 11 months of 1978)

BRITISH EXPORTS TO IRAN

The Iran crisis takes its

| | £70.7m | Food and animals for food |
|--|--|---|
| | £4,5m | Beverages and tobacco |
| of which | £4.6m £4.6m | Materials Textile fibres |
| of which | £67,9m £28,7m | Chemicals Medicines |
| of which | £106.3m £32.9m £18,8m | Components and semi-finished products lron and steel Textile yarns and fabrics |
| of which and and and and and and | £406.9m £91.2m £47.5m £12m £68m £20.7m £31.5m £125.8m | Machinery Power generation Special industrial equipment Metalworking machinery General industrial machinery Telecommunications and sound recording Electrical machinery Road vehicles |
| of which | £36,6m £13,3m | Miscellaneous manufactured goods Instrumentation |
| Grand tota | £64m | Other products, including defence equipmen |

brought to a standstill, which representing almost 90 per cent

shop

seems bound to have a short-

Iran has also become of major

interest to the UK's textile companies. In 1978, it purchased

some 4m square metres of

woollen and worsted fabrics from the UK, making it about

the sixth biggest export market

actually operating on the ground in Iran, British Petroleum is of

course much the most signifi-

cant. Formed in 1909 as Anglo-

Persian Oil, BP was still draw-ing nearly two-fifths of its crude oil needs from this source in

1977. As a result of the produc-

tion cutbacks, it has had to

warn customers that supplies

could be reduced by as much as

30 to 35 per cent in the first quarter of this year.

However BP has had no signi-

ficant assets in Iran since the

oil industry there was nationa-

lised in 1951. Most of its

expatriate staff have now been.

Elsewhere, the current up-

heaval is having a big impact on a number of civil engineers

are experiencing substantial

difficulties in maintaining opera-

ning nearly £200m of orders a

Letest estimates suggest that

tions in the country.

Among the UK companies.

term impact on profits.

for this sector.

withdrawn.

Source: Department of Trade

of its overseas work, is due for

completion by the end of this.

in the last week work on the

project has effectively been re-

creditors. Payments on the con-

tract, which created problems

for the company in the early

stages of the work, have been continuing normally.

Laing and Wimpey, working

together as major sub-contrac-

tors on the Isfahan complex.

heard last week that although

the £60m contract on which

they are now engaged is to pro-

ceed (completion is due later

this year) the next phase of the development has been

stready completed a £50m con-

tract at the complex and the

latest work involves the provi-

sion of main utilities and infra-

structure services. Wimpey says

that activity on the site is now only ticking over.

duced to activities like work-

Ministry of Defence. IMS is also involved in another major. military project in Iran a military workshops complex representing £50m of work for the Costain Group. Work is continuing on the site, although fuel shortages and the closure of local banks have been causing problems.

Supply difficulties also played a major part in GEC's decision to suspend work on the \$57m Ahwaz power station. A great deal of equipment has already been shipped and site construc-tion is about 25 per cent under way. Northern Engineering Industries has supplied one boiler to Ahwaz but has suspended work on a second. Another deal, to supply wagon parts for local manufacture, has also been put in abeyance by this company.

The Iranian upheaval will be especially bitter news for a number of UK companies with joint venture projects in Iran that were just approaching the pay-off stage.

Repatriation of personnel

Lucas Industries has a 35 per Sir Kenneth Selby, Bath and cent stake in a plant designed to Portland's chairman, says that supply electrical components to the motor industry, and had big hopes for this fast growing sector. But the troubles broke maintenance, mainly out just as the plant was about to start up. It has now been put: diesel fuel and petrol. He says on a care and maintenance basis that banks in the vicinity of the and Lucas's technical personnel have been brought home:

contract have no money, making it very difficult to pay local There is a similar story from London Brick. A joint manufacturing venture in which it has invested about fim reached its planned output level the day, before the troubles began. The project, which represents London Brick's first overseas manufacturing venture, has now been temporarily closed down.

A joint venture company in which Armitage Shanks has invested about £300,000 also came: to a standstill before the company had a chance to make profits. Other companies like BOC and Foseco Minsep have made investments of a similar order in local factories, and have recently brought UK personnel.

Finally, the Iranian crisis will make a mark on Britain's "invisible" trade figures. The revenue from shipping in and out of Iran is estimated to be worth £300m a year to UK shipowners. As P and O, one of the market leaders, says glumly enough as it is. This is an added burden which can exacerbate the situation."

So the present upheaval is having repercussions across a broad range of UK industry and commerce. In most cases, the exposure is limited and many at present is only involved in companies are confident that the later whatever the political outengineering to a tank testing come. Yet they are distinctly and refitting establishment in a uneasy about their existing exposure. And they have been £19m, but work has not yet forced to recognise that their ambitions in a country that at at one time seemed to offer almost

This is presenting a major problem to Chrysler UK among others. Two ships carrying between them 18,000 of its car kits are currently in the Gulf, and UK stocks destined for have reached at least 20.000.

Road vehicles are the largest single category of UK exports to Iran-with a value of £126m in the first 11 months of last year -and Chrysler has the lion's share. Under an open-ended contract signed five years ago, Chrysler is scheduled to deliver around 100,000 car kits this year worth around £100m of turnover. Total sales of Chrysler UK amounted to £458m in 1977.

So far there has been no short-time working or lay-offs among the 1,500 or so Chrysler UK workers involved in the

Suspension of shipments

But other suppliers have aiready had to take action Massey-Ferguson has recently suspended shipments on a con-tract to supply \$70m of tractor components to Iran in the 12 months to next August. Its UK plants were to have provided a fairly substantial part of this

Exports by BL (formerly year amounted to around £15m. It has a minority interest in Leyland Motors in Tehran which assembles medium weight and another in Leyland Diesel which finishes and assembles engines. Both these businesses have been shut down by supply difficulties, although it is understood that an Iranian owned company which assembles and distributes Land Rovers is still

Meanwhile, UK sub-contractors are becoming increasingly concerned about the

up in full. Any such shortfall would theoretically hit the UK tax-

and builders. Several say they ject have been paid for by the Ministry of Defence. This suggests that any cancellation would not require large write-UK contractors have been winoffs. It would only mean that the group's profits would be lower than might otherwise have been

range of UK exporters. GEC booked £13m of orders from this source in the six months to September, out of a worldwide order intake in this period of £489m. Clarkson International has a £im machine tool contract ready for dispatch—shipment has been postponed for the time being. CompAir's construction equipment division, which accounts for two-fifths of its sales, has sold significant building a 300 km stretch building a 300 km stretch In assembled and kit form. country. The contract, worth Shipments have now been £105m to Marples Ridgway and

year in Iran, making it about their third biggest market in the Middle East after the United Arab Emirates and Saudi Arabia. Few contractors have experienced disruption on site caused directly by civil disturbances, but most are now facing serious problems caused by a shortage of fuel supplies

Among the UK contractors with heavy commitments in Iran is Marples Ridgway, the amounts of equipment to Iran desert road in the south of the

capital. Since the start of this

month police have been sum-

marily fining-and hauling off

to jail if need be-offenders

of the city, says he wants Cairo

to "take on the appearance

and intends to maintain his law-

and-order onslaught until the

9m inhabitants knuckle under.

thousand spot fines on jay-

walkers, beggars, illegal street traders, and litter droppers.

Mamoun's constabulary has caught some quite remarkable malefactors. When 230 people

are found guilty in one day of

building without licences, it does suggest that Cairo has a

fair way to go to become as

law-abiding as, say, Copen-hagen or even Cardiff.

But the intention is there: 180 Cairenes were fined last

126 high-spirited fellows had to pay up in one day just for whistling at passing girls.

Apart from imposing several

which becomes its stature

Saad Mamoun, the governor

against a host of local laws.

and by the closure of many

Closure of The Isfahan decision repre-

sents a major loss of potential future work for a wide range of other UK companies. Machine tool manufacturers like Alfred Herbert had hoped to be involved. So had Vickers, which one contract in the country. The company is due to supply deal signed last May and worth started

main contractor

Isfahan is International Military unlimited scope have had to be Services, the international colo-sharply downgraded.

"I beneve in mitiative—old people need your's and mine" Lord Boothby

"Britain has often led the world with new ideas and new ways of tackling problems. Few people have a worse problem than our old folk. Medical science enables many of us to live longer, but it cannot give the answer to the suffering brought by loneliness or being shut in a depressing room day after day, because there

is nowhere to go. Help the Aged is working to solve this difficult. human need with the imagination it used to pioneer flats for the elderly. With local volunteers it is helping to provide Day Centres where old people find companionship and friendly help. Similarly it is also moving forward to fund extra medical research into the

physical afflictions of old age."
Full details of Help the Aged's work will be sent with pleasure together with helpful information on minimising taxation (no Gift Tax is new levied on logacies to charity up to £100,000) Please write to: The Hon. Treasurer, the Rt. Hon. Lord Maybray-King, Help the Aged, Room FT7L, 32 Dover Street, London WIA ZAP.

±£150perpetuates the memory of someone dece to you on the Dedication Plaque of a Day Centre.

ing their cargoes in. **MATTERS**

Silkin bites

on the biscuit

This afternoon in Whitehall, light may be shed on the Great Biscuit Mystery. At the Ministry of Agriculture, the Food Manudiscuss the effects of Britain's transport troubles on the national larder — thus giving Minister John Silkin or one of his colleagues a chance for solicitous words with Sir Hector Laing.

As chairman of United Biscuits, panel member Laing is one of the most powerful figures in his line of business; and last week, when the strike began, the highest-p:tched cries of alarm came from the Cake and Biscuit Alliance. There was "saturation coverage" in the newspapers, on radio and TV, for dire forecasts from the alliance that biscuits could vanish from shop shelves in a

It just happens that Laing is the highly-regarded adviser to Mrs. Thatcher on food policy tactics. It also happens that one James Prior is on the Board of United Biscuits — and he formerly held the agriculture, fisheries and food portfolio now so possessively gripped by Silkin

Is the nation about to be brought to its knees for want of cream crackers? Or was there some tactical skill dis-played last week, thereby adding Government in general (and the "Beast of Brussels" in particular) particular)
policy?

Five-star rhetoric

Stafford, managing director of the Dorchester Hotel in Park Lane, has recently put out a clarion call to his senior week rise; cinemas, throwing down litter, staff. "Would you all try to But Sam said: "I've just had or engaging in petty extortion inculcate a feeling of loyalty to a bellyfuliof strikes and I think. A heetic clean-up campaign has our country in which we are the public has too." So he has begun in the Middle East's most

taken the matter in hand per- anarchic and over-populated sonally, by going on hunger strike: until the issue is settled, he will subsist on nothing but a little honey and water, three times a day.

Of a religious disposition, he

feels sure of not having to fast more.

"Now we've got plenty of panic food, our panic petrol runs out!"

fortunate enough to live," urged his memorandom.
Australian-born Stafford went to tell how the battle against inflation could be won-by avoiding waste of anything; he mentioned gas. electricity. oil,

goods, even people. The cause of this Churchillian of an anti-climax. He had seen one of the hotel's chairs standing out on a fire escape.

Hunger war

On this side of the Atlantic, we tend to think that America has little to teach us about trade unionism-perhaps we know too much already. Then consider Sam Cimaglia, the leader of New York's grave-diggers.
A strike called for the weekend would have brought all For businessmen whose travels work in the city's 62 cemeteries to a dead stop (if 'hat is the then, here is a word of warning appropriate term). The worthy Try to avoid molesting women spade-wielders want a \$76-1 in the street, smoking in

until he becomes a candidate for the cemetery himself. "God will be with me." Sam also has experience on his side-he tried the same tactics in 1973, and after 14 days the cemetery-owners just caved in. Their nerves could not stand any

Trial balance

How important are the initials of Messrs. D. R. Pelly and D. H. Johnson, vice-chairman andand secretary respectively of Barclays Bank International? I fancied there must be a serious case of armour-propre when I learnt that the bank's newlyissued annual report and accounts was partly reprinted, and the rest taken to pieces for new sheets to be inserted—just because Pelly appeared under the balance sheet as "R. D." and Johnson as "D. E."

Of 28,000 copies sent out, a quarter were entirely replaced, and the others expensively pulled apart
I gather that the fellows

themselves were completely uncaring But "legal require-ments" caused all the upheaval-because it was deemed that the balance sheet was not precisely as signed by the auditors, and so became invalid.

Whistle stop

take them to Cairo now and

Second thoughts If the Royal African Society's

information sheet is believed, the Maharishi Mahesh Yogi is now dabbling in South-West Africa The society's meeting on Thursday is listed as "Namibia: Meditation and Confrontation." High-pressure meditation teams have indeed been sent by his self-styled Holiness, the new master of Menimore, to Nicaragua to help President Samoza, to Iran, and even to Rhodesia—where 2,000 guerrillas are claimed to bave obediently downed arms.

Would the Maharishi be

going to Namibia in person, wondered. "All a frightful mistake," said a girl at the Northumberland society's Avenue office. "We meant mediation, not mediation." Avenue office.

FINANCIAL TIMES SURVEY

Monday January 8 1979



Diesel Engines

The world diesel engine industry is set for a period of rapid growth. With its well-established advantages of fuel economy and durability, the diesel engine is likely to displace other forms of power, particularly in countries such as the U.S. which are having to adjust to the new era of high energy prices.

The industry has big

potential for growth

By Geoffrey Owen

one of the most attractive oppor- has been hit hard by the world-tunities for capital goods pro- wide slump in shipbuilding tunities for capital goods producers over the next decade. In an era of high oil prices and for other markets and they have prospective energy shortage the diesel's well-established characteristics of fuel economy and durability should enable it to expand its share of existing markets and to win new customers who have in the past relied on other forms of power, particularly the petrol engine:

The biggest area of potential growth is undoubtedly the U.S. where the shift from petrol to diesel is already under way, but there are also opportunities for new business in Europe and Japan, especially if the dieselpowered car gains in popularity as much as some forecasters. believe. In the developing countries demand for diesel engines, both in electricity generation and in a variety of other industrial applications, is expected to grow rapidly, if erratically, over the next few

ent models, are competing for a market believed to be worth the overall author for the over \$15bn a year. There is not world diesel augine industry a great deal in common between remains bright. Studies com-a tiny 3 hp engine used to power missioned by the Business a small irrigation pump and a Intelligence Program of SRI huge slow-speed diesel installed International, the U.S.-based

THE DIESEL engine represents engines for marine propulsion, engine have been forced to look devoted much effort to selling generation; there is a good deal

been the sharp downturn in demand for diesel engines in the Middle East and some other oil-producing countries such as Nigeria. There was a remarkable boom in these markets in 1974-75, hringing a sudden up-surge in business to manufacturers of diesel engines and of products incorporating diesel engines, such as generating sets. As these countries became oversupplied or started running into financial problems, the tap has been suddenly turned off and some suppliers have found themselves with large stocks to dispose of The Middle East remains an important market for the medium and long term, but the growth will be less hectic than it was in the period Competition immediately following the oil price increase of 1973;
More than 250 diesel engine customers, too, are likely to be manufacturers throughout the more discriminating in their world, making some 5,000 difference of suppliers.

Yet despite these difficulties

of over capacity in this part of the industry. Another depressing factor has

> and the value of sales will rise from \$15bn to \$35bn.

Within this global figure advantage of the there will be wide variations growth in demand. between the different parts of the industry. The number of engines supplied to the farm machinery industry is unlikely to show much growth. There will; however, be a tendency for the average hp in farm tractors to rise and agriculture will remain an important outlet for the diesel engine producers. The most spectacular growth

is expected to occur in the automotive field, covering cars as well as trucks. Although there are great uncertainties about technical developments, government regulations and customer reaction, demand in automotive sector expected to rise by at least 10 in a giant oil tanker; growth consulting and research organirates vary considerably from sation suggest that degiand out
one sector of the industry to side the Soviet bloc and China part of the industry which has
another. One sector, in particular will rise by an average of 8 per aroused the greatest excitement
lar, the manufacture of large cent a year between 1976 and in the past year or two; engine more widely in other sectors

are making ambitious invest-ments in new capacity and in rapid growth. new sales organisations to take

The main focus of attention is the U.S. where in the lower horse power ranges - below petrol engines are produced in away product. Thus there has. beginning to be appreciated efficiency

1986. Unit sales will double makers and component suppliers and the diesel industry in the favourable to the diesel engine from 5.5m to some 12m engines are making ambitious invest- U.S. seems set for a period of U.S. regulations will be; in

Report

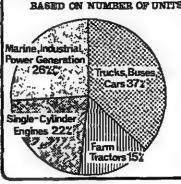
A research report published about 300 hp—the diesel is much. Kuhn Loeb, one of the leading less firmly established than it is in Europe or Japan. The price of petrol has been and sales of diesel engines would still is relatively low; small grow at 12-15 per cent annual grow rate over the next decade, comenormous volume and in some pared to a 4.7 per cent annual applications are almost a throw-rate during the preceding away product. Thus there has decade. "Incremental unit been little incentive for the use: growth," said the report "will of diesel engines except in such come in the automotive and light areas as long-distance trucks, and medium duty truck markets heavy construction equipment as engine substitution (gas to and tractors where ruggedness, diesel) accelerates due to durability and fuel economy are increased public awareness of needed; rail traction and power the diesel's efficiency, higher generation are also important fuel prices and government markets in the U.S. for larger encouragement of diesel per cent a year and perhaps as markets in the U.S. for larger encouragement of diesel much as 15 per cent. It is this engines. But the need for development through liberalised part of the industry which has greater fuel economy is emission standards and fuel It is still unclear just how

particular, there are fears that if the Federal Government sticks to its proposed standard on nitrous oxide emissions, some manufacturers of diesel-powered insuperable technical problems. Even if the standard is relaxed, some European observers believe that for many potential customers the balance of advan-tage between diesel and gasoline will not be clear cut (especially if the efficiency of the gasoline engine is improved) and that the swing to diesel will not be as dramatic as the forecasts

Nevertheless, even a modest acceleration in the growth rate should provide plenty of oppor-tunities for European and Japanese engine manufacturers, since in the lower ho ranges they have bigger volumes, more experience and greater technical know-how than the domestic U.S. manufacturers. Several of the leading foreign companies are

quoted above suggest,

Breakdown by Application.



Breakdown by Horse Power Category BASED ON Category SALES VALUE 30~500hp 75%

taking steps to strengthen their position in the U.S., either by take-owrs or by setting up their own factories or by making supply arrangements American original equipment manufacturers (OEMs).

interesting competitive bettle is taking shape, with European manufacturers lighter diesel engines attacking the U.S. market and the hig American manufacturers of the higher hp automotive engines, like Cummins, Detroit Diesel Allison (the General Motors subsidiary) and Caterpillar, seeking a larger share of the European market. Yet the strongest competitors in several segments of the market may prove to be the Japanese, who

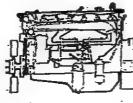
volume to build a strong position in the developing countries and increasingly in the U.S. Europe is the home of the

diesel engine and much of the know-how on which nations have built up industries, including Japan and European manufacturers. large marine diesels, for instance, Japan, with its immensely successful shipbuilding industry, has been almost wholly depen dent on European licences. But Europe's traditional leadership in some of the fastest-growing parts of the market is under challenge. In the next few years the ability to sell will count at least as much as the ability to have used their huge domestic design and to manufacture.

Variationsona

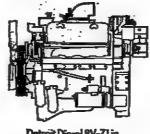
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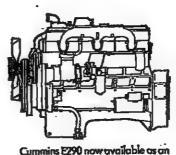
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New trends in a complex industry

BECAUSE IT covers such a broad horse power range, from three hp to 50,000 hp, and such a variety of applications, the structure of the diesel engine industry is complex and difficult to define. It is possible to classify the main segments by engine speed (Table I) or by horse power (Table II), but the boundaries between the segments are not clearent and the world shipbuilding industry dating and improving its engine designs—a process of evolution, but still requiring substantial expenditure; a particular area of attention at present is the need to improve the large engines for trucks ability to burn low-quality fuel oils. The manufacturers must be able to generate enough boundaries between the segment of the market can-accommodate all the suppliers now operating. Another engine specialist is the suppliers now operating. L. Gardner of the UK, now part ture; a particular area of attention at present is the need to improve the large engines for trucks and other applications in relatively small volume (about 5,000-6,000 engines a year), but its products have an enviable world market, either through the manufacturers that to find the manufacturers in the UK. Another engine specialist is the suppliers now operating. L. Gardner of the UK now part ture; a particular area of attention at the suppliers now operating. L. Gardner of the UK now part ture; a particular area of attention at the suppliers now operating. L. Gardner of the UK now part to the suppliers now operating. L. Gardner of the UK now part to the suppliers now operating. L. Gardner of the UK now part ture; a particular area of attention at the suppliers now operating. L. Gardner of the UK now part to the suppliers now operating. L. Gardner of the UK now particular area of attention at the suppliers now operations. The same ture; a particular a ments are not clear-cut. medium-speed engine which belongs in the second category of Table I may compete in certain applications against a highspeed engine from the third

A further complication is that a company may have two entirely different ranges of engines within its portfolio. Thus Yanmar of Japan is probably the world's largest producer of small diesels for agricultural and other applications, but it also makes much larger engines of a different design for marine propulsion. Similarly MAN of Germany makes highspeed engines for trucks, but is also one of the major producers of very large slow-speed engines for marine propulsion, Within Hawker Siddeley there is not much in common between the small engines made by Petter and Lister and the larger units made by Mirrlees Black-

At the top end of the horsepower category there are the three leading European pro-ducers of slow-speed marine diesels, Sulzer of Switzerland, MAN of Germany and until the shipbuilding Burmeister and Wain of revives, perhaps in t Denmark. These engines were 1980s or possibly later? primarily designed for ship propulsion, but with the slump in company's ability to go on up-

on European know-how for its medium-speed and slow-speed through mergers between commarine engine production, panies or through withdrawals Engines designed by Sulzer, from the diesel engine business MAN, Burmeister and Wain, remains to be seen. Stork-Werkspoor of Holland, Pielstick of France. MaK of Germany and others are manu-

These medium- and slow-speed engines are produced in small volumes-few companies have an output of more than 100 engines a year—and a major uncertainty over the next few years is whether there will be enough orders to keep all the manufacturers, both licensors and licensees, in business. Will the companies now operating succeed in obtaining enough non-marine orders to keep going uptil the shipbuilding market revives, perhaps in the mid-Much will depend on each

Engine categories

THERE ARE three main categories of diesel engines:

1-Engines with a speed up to 250 revolutions per minute (rpm), weighing 20kg (44lb) per horse power or more. These consist of low-speed two-stroke crosshead engines with piston diameter of about 1 metre (3.28 ft). They are produced in versions ranging from four to 12 cylinders and cover an output span of about 6,000 hp to

2—Engines with a speed of 350-1,000 rpm, weighing between 5 and 15 kg (11-33 lb) per hp. There is a range from 2,000 to 30,000 hp in engines of 6-18 are also used to power small cylinders. They are used in boats, in electricity generation, ships where a lot of power has in irrigation and in a great to be accommodated in tight variety of other industrial space, such as ferries, passenger applications, ships and high-speed freighters. Source: Robert Bosch.

cations, but engines of this type

their own production or that of their licensees. Sulzer has 23 licensees in 16 countries making an adequate flow of new orders. licensees in 16 countries making an adequate flow of new orders. its slow-speed engines and 10 Since the marine engine industry licensees in eight countries is likely to suffer from over-making its medium-speed capacity for several years to It is interesting that even that the number of competing Japan, despite its prowess in manufacturers and competing shipbuilding, has relied mainly designs is certain to diminish. Whether this will come about

Inreat

Germany and others are manufactured by a number of A further threat to medium-speed engine producers is the move by the high-speed is the move by the high-speed manufacturers into the higher hp ranges. It is possible that in certain applications a high-speed engine made by, say, Caterpillar — a company which has the cost advantage of a large internal market for its engines -will compete against a med-ium-speed diesel produced in much smaller quantities. There are, of course, great differences between the two engines in design and specifications: quite apart from the conservatism of diesel engine buyers and their reluctance to abandon a proven supplier, there may be compelling technical reasons for order-ing a "premium-quality" engine from a specialist sup-

plier. Nevertheless, the ten-dency for the high-volume engine manufacturers to look for customers outside their traditional fields is certain to grow. Below 500 hp, as Table II Specialised ships concerned with shows, there are also a large offshore exploration also use number of manufacturers, this type of engine, but because of the depressed state of the tion can be drawn—although, as

industry, with an annual output outside sale.

of around 5m units, compared with a few thousand in the first and second categories. Trucks, tractors and construction equipment are among the main applications.

Inter-trading between dieselongine manuacturers/users, and second categories. Trucks, the company has in the past broadest range of dieselongines of any vehicle manuacturers. as an independent supplier; it its own vehicles.
is the major producer of diesel Inevitably a look at the 30engines for heavy trucks in the 500 hp category in Table II

manufacturers Some trucks, tractors and construction equipment have developed their outside diesel engine sales as a substantial business in its own right. In the U.S. General Motors has its Detroit Diesel ment, has in recent years been investing heavily in new diesel engine facilities to supply out-European market. John Deere, the largest U.S. producer of farm tractors, is also putting a great deal of effort behind its

non-captive engine sales. In the UK the largest producer of diesel engines after Perkins is Ford. It has a big captive market in its own vans and trucks, but is also a major supplier to outside customers, including makers of construcshipbuilding industry about half the industry is output is at present going into stationary applications, for power generation.

3—Engines with a speed range of over 1,000 rpm and weighing 2-5 kg/hp (4.4-11 lb/hp). This is the big volume sector of the industry, with an annual output outside sale. association with a truck manu- and has an important nonfacturer (who would provide captive business, but it also the base load of orders), but offers engines made by Perkins has decided to stick to its role and other suppliers in some of

durability.

In practice, however, a company like Perkins, though owned by Massey-Ferguson and derived ing a substantial volume of scale; their collidates of their own the course, do so on a very large scale; their collidates of which capacity for several years to business from Massey-Ferguson gives them a solid base on which come, some observers believe that the number of competing manufacturers and competing manufacturers and competing designs is certain to diminish. Can and does supply engines to But as the trend towards larger whether this will come about the narent company's direct engines continues and as the can and does supply engines to the parent company's direct competitors. The same applies no Deutz in Germany; the parent company, Kloeckner-Humboldt-Deutz, makes tractors and farm machinery which use Deutz and other regulations), it is engines but the engine side in prescribe that some of the smaller engines, but the engine side is possible that some of the smaller managed as an independent business.

possible that some of the smaller truck manufacturers may decide to increase their purchases from

outside engine suppliers.
Companies like Cummins
argue that they have the volume to support the investment in new engine development and that the truck manufacturers, unless they are operating on a Motors has its Detroit Diesel
Allison subsidiary which supplies engines to GM's competitors as well as to GM itself.
Caterpillar, the world's largest producer of earthmoving equipand employment implicationsquite apart from the blow to prestige. But it seems likely that the smaller truck makers, as engine factifies to safe is its they prepare for investment in largest OEM customer in the a major new model programme. largest OEM customer in the largest OEM customer in the U.S. and it is seeking to establish a stronger hold on the reliance on outside engine suppliers.

Caution

Forecasts of rapid and farreaching rationalisation in the diesel engine industry need to be treated with caution. Operators of trucks, construction equipment, fishing boats or even power stations, once they become convinced that a particular engine is totally reliable and suits their requirements satisfactorily, are extremely reluctant to switch to another supplier. (By the same token, if an engine breaks down in service, the supplier will find it virtually impossible to re-establish his reputation with that particular set of customers.)

Hence a company which pro-duces high quality engines and enjoys the confidence of his customers can maintain successful and profits profitable business even though his volume of output may be small. Engineering a new engine into a truck and proving it in service may take four years or more and at the end of it the new engine may be offered standard. Market shares in this industry do not change as

sumer products.

At the hottom end of the hp range the competition is no less fierce, with the Japanese moving strongly shead in recent years. Japan probably accounts for not far short of half of all diesel engines produced in the 0-30 hp range. The blagest manufacturers are Yanmar and Kubota,

STRUCTURE OF THE INDUSTRY

The table lists some of the main European, Japanese and American manufacturers in each category. Manufacturers who are primarily licensees are not included.

| Size and main | WESTERN E | UROPE | JAPAN | U.S. |
|--|--|--|----------------------|----------------------------------|
| applications | ITALY | FRANCE | | |
| - 4 | Lombardini | Bernard | Yanmar | Onan ² |
| 0-30hp Pumps, small generators, | Ruggerini | | Kubota | Teledyne |
| small agricultural and | Ducati | GERMANY | Mitsubishî | Wiscousin |
| industrial equipment. | UK | Hatz | Isuzu | |
| marine | Petters1 | Farymann | IHI | |
| | Lister ¹ | Deutz ³ | | ' |
| | CEDMANN | ED A NOR | | Detroit Diesel4 |
| | GERMANY | FRANCE Possost/Citeson | Isuzu Mitsubishi | Commins |
| 30-500hp | Daimler-Benz Volkswagen | Peugeot/Citroen Renault | Toyota | John Deere |
| Trucks, buses, cars | Dentz ³ | Bandonin ⁵ | Hino · | Int. Harvester |
| tractors, farm machinery. | Man | Dagoodin- | Nissan | Mack |
| construction | MWW13 | ITALY- | Toyo Kogyo | Wankesha ⁸ |
| equipment. | Opel ⁴ | Fiat | Daibatsu | Teledyne |
| power generation, | • | VM | Komatsu | Continental |
| ship propulsion | UK . | Same | THI | Allis-Chalmers |
| park Last- | Perkins ⁷ | | Yanmar | Perkins ⁷ |
| | Ford | SWEDEN | 14. | |
| • | Leyland | Volvo | | |
| | Cummins | Saab-Scania | n p | |
| • | Gardner! | | | · '', |
| | Rolls-Royce | HOLLAND | | |
| | Motors | Daf : | ai . | |
| • | Bedford4 | | | |
| | Lister ¹ - | | | 7 |
| | Kelvin ^s | | 1,177 | |
| | Dorman ^s | | | |
| | | FRANCE | Daihaisu | Electro-Motive |
| | GERMANY | SEMT-Pielstick | Niigata | Division of GM4 |
| 500-5.600hp | MTU | | Fuji | Cummins |
| Ship propulsion, | MWW13 | ITALY | Yanmar | Caterpillar |
| power generation, | MAK14 | Grandi Moteri | <u>Ihi</u> | Alco ⁵ |
| rail traction, | Deutz ³ | Trieste | Akasaka | Delaval |
| other industrial uses | T197 | SWEDEN | Mitsubishi | Fairbanks Morse ¹¹ |
| | UK Ruston= | Nohab ¹⁰ | Hanshin | General Electric |
| | | TAGENTA. | | Cooper |
| | | and the second s | | COOPER |
| | Paxman ⁵ | NORWAY | • • | |
| | Paxman ^a Mirries | NORWAY Berren | | |
| | Paxman ⁴ Mirrlees Blackstone ⁷ | NORWAY Bergen | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE-Allen ³ | Bergen | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE-Allen ⁸ Cummins | Bergen FINLAND | | |
| | Paxman ⁵ Mirrlees Blackstons ¹ APE-Allen ⁸ Cummins Rolls-Royce | Bergen | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE-Allen ⁸ Cummins Rolls-Röyce Motors | Bergen FINLAND | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE Allen ⁸ Cummins Rolls-Royce Motors | Bergen FINLAND Wartsila | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE-Allen ⁸ Cummins Rolls-Röyce Motors | Bergen FINLAND Wartsila HOLLAND | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE Allen ⁸ Cummins Rolls-Röyce Motors SWITZERLAND | Bergen FINLAND Wartsila HOLLAND Stork-Werkspeer | | |
| | Paxman ⁵ Mirrlees Blackstone ¹ APE Allen ⁸ Cummins Rolls-Röyce Motors SWITZERLAND | Bergen FINLAND Wartsile HOLLAND Stork-Werkspeer Brons | Mitsubishi | <u>Delavai</u> |
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| Over 5.000hp Ship propulsion, power generation | Paxmans Mirrless Blackstones APE-Aliens Cummins Rolls-Royce Motors SWITZERLAND Sulter SWITZERLAND Sulter DENMARK Burmeister and Waln GERMANY MAN MARIS Deutzs FRANCE | Bergen FINLAND Wartsila HOLLAND Stork-Werkspoor Brons UK Doxford ¹² Mirrlees Blackstone ¹ HOLLAND Stork-Werkspoor ITALY Grandi Motori | | Fairbanks |

The numbered notes refer to the parent company Hawker Siddeley 37 per cent owned by Hawker Siddeley Kloeckner-Humboldt-Deutz

General Motors GEC Dresser Industries Amaigamated Power Engineering Alsthom-Atlantique

Colt Judustries British Shipbuilders Knorr-Bremse KG Fried. Krupp GmbH

both of whom have a substantial this hp range binclude the compete strongly in all the main and construction equipment. India, as well as the established Many of these engines are not suitable for sale to OEMs in Europe and the U.S., where the requirement is for a more rugged engine, but they have a big sale in the developing countries, especially in the Far East where agricultural condi-tions are similar to those of

Japan. Other strong contenders in British and German producers.

Throughout all the segments of the industry competition is becoming increasingly, international. As in other branches of engineering, there may be a tendency for the industry to polarise between the small specialists, serving a limited market, and the large-scale pro-

barriers between the different sectors of the industry are likely The choice of strategy for the diesel engine manufacturer, in relation to design, manufacture and marketing, is likely to be-come even more difficult in the

By Geoffrey Owen



Far from just getting off the ground, the new Golf 1500cc. diesel engine is a roaring success. In fact, it's proved to be the most modern.

efficient, economical and quiet engine of its type. (As quiet as the petrol version you'll find in the equally successful Volkswagen Golf saloon.)

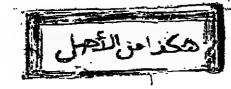
And like all Volkswagen's industrial diesel engines. its uses are wide ranging. You'll get the same

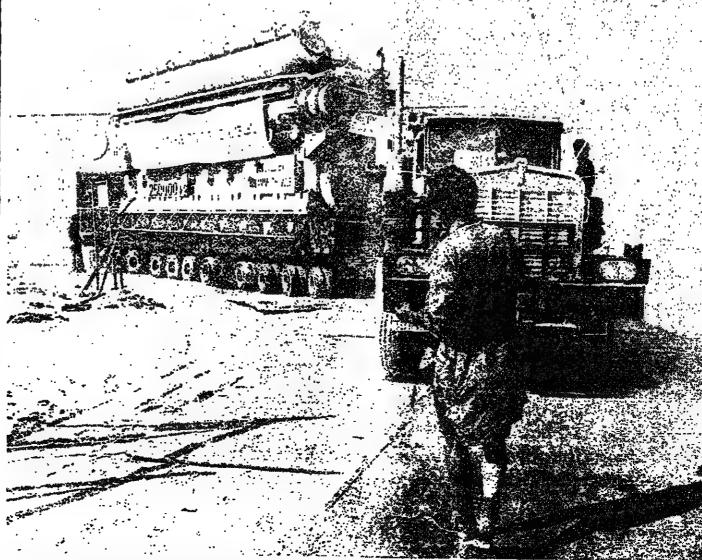
superlative performance whether it's planted firmly on the ground in-compressors and generators or flying high in an air ship.

The full range of water and air-cooled engines is available in the UK exclusively from MIAC.

Find out more about the current range of engines by posting the coupon. (And keep a look-out for the new six cylinder diesel engine, available soon.)

| Please send ma you industrial orgines. | ar technical brochure about Volkswagen |
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Stork Werkspoor Diesel of Holland built its first marine diesel engine in 1908 and is one of the leading Stork Werkspoor Diesel of Holland built its first marine diesel engine in 1908 and is one of the leading producers of medium-speed engines for marine and industrial applications; the range consists of the TM410 and the TM620 with outputs from 4,000 to 22,000 ohp per engine. The company also produces a range of smaller engines with outputs ranging from 500 to 1,800 blep per engine. Like other medium-speed engine builders, Stork Werkspoor has been seeking to develop new markets in power generation. A total of 12 TM620 engines, six in each of two power stations, are currently in operation. One of these is in Saudi Arabia and the other in the Emirate of Ras-Al-Khaimah. The picture shows the first TM620 diesel engine being transported to the Ras-Al-Khaimah power station. The first V-form TM620, a 12-cylinder engine is now being assembled in the Amsterdam factory: the company believes there is "interesting potential" for this engine in 100-200MW power stations

THE FINAL DIESEL FACTE

More people choose Peugeot than any other.

The figures speak for themselves. When purchasing a diesel powered car more people choose Peugeot than any other Fact!

Why is this? Firstly, we offer a comprehensive range of Saloons and Estates. Cars that are suitable for family and business motoring needs.

Secondly Peugeokare the diesel experts, having built well over a million diesel engines, each one to highly exacting standards.

A Pengeot diesel engine is strong, reliable and, above all, very economical. Peugeot have combined the benefits of diesel to the qualities of the luxury car. The 504 range of diesel

cars is quiet, comfortable and so easy to drive, making them superb for the high mileage motorist who wishes to cover long distances economically and in total comfort.

There's Peugeot Finance with extended credit or leasing facilities* to make owning a 504 Diesel so easy. A twelve month unlimited mileage guarantee covers every car and with over 230 dealers throughout the British Isles, you have the reassurance that servicing will present you with no problems.

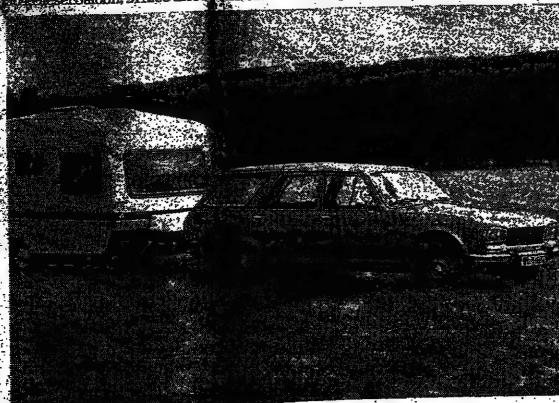
Test drive a 504 Diesel and discover for yourself the many advantages of Peugeot Diesel motoring.



A specification, 2112cc diese sision of the newly-introduced 504 1800 Saloon.



504 GLD, a truly luxurious car powered by a 2304cc engine.



504 Diesel Estate with a 2112cc engine makes an ideal working car.



504 Family Estate Diesel, 2304cc with three rows of forward-facing seats for carrying up to eight people.

Peugeot 504 Diesel Range

Peugeot Automobiles U.K. Ltd., 333 Western Avenue, London W3 0RS. Tel: 01-993 2331



One of the most significant

largest builder of diesel engines

in the world, stopped an £8m

cars and light vans. The group took this action after the diesel

Golf appeared successfully using a dieselised version of a

Even BL, which through Leyland Vehicles has a long

history of diesel engine exper-

tise (the Daf Scania, Volvo

Mack and Pegaso diesels can all

trace their origins back to Ley,

land designs) is preparing a dieselised version of the B

series petrol engine to take i into the diesel car market and will offer a 1.8 litre diesel

Princess by the middle of 1979: In the longer-term dieselised

O series engines and others will

be used to power BL vehicles.
Chrysler in Spain has had:

some success with 160 and 180 cars equipped with diesel' engines from its Barreiros truck subsidiary but is working

to convert existing petrol

Europe at the omment is Fiat.

The Fiat 131 and 132 cars are

or soon will be available with

a diesel engine produced by a

new company, Sofim, set up in 1974 by Fiat, Alfa Romeo (the

State-owned Italian concern) and Renault (the State-owned

petrol engine. Flat have put a

The Sofim plant needs to

cylinder block. And in spite of its investment, Renault's diesel

will be using a dieselised version

When it launched the 131 diesel recently Flat pointed out that sales of diesel cars in

in northern France.

French group).

engines to diesel operation. The odd manufacturer out in the

petrol engine.

Expertise

While the builders of large marine engines are

suffering from the world slump in shipbuilding, there are hopes of spectacular growth in the demand for diesel-powered cars. On this, and the following two pages, the prospects forthe diesel engine in automotive and marine applications are assessed.

boom in car sector is forecast

THE PASSENGER car diesel in Europe of 482,500 diesel cars engine sector is the cause of will double by 1985. Authoritative forecasts are for new cars do the kind of mileage cassful and VW just cannot keep crease at an average of nearly the purchase of a diesel car a in four orders for a new Golf

and the commitment of came "fashionable" in some America's biggest mant facturer way that would give demand a General Motors to a dieselization policy for up to enothird of the 5.5m or so cars it produces every

available in Durage. Now every Derement manufacturer has introducted, or is working hand to introduce, a diesel car and if demand continues at the

It can be argued that about Western world demand to in- or motoring which would make 25 per cent a year-admittedly viable proposition. So in theory 25 per cent a year and the sales from a fairly low base—up to sales could go on growing diesel-engined version but sales rapidly until this level of mar-The car diesel boom will be ket penetration by the diesel is many customers are not willing powered by the major changes reached. There is another fac- to wait two years for delivery. taking place in the U.S. market tor, however. If diesel cars befurther big boost.

There are already signs of this "pull" in demand from the motorists in West Germany. ewareness and demand for dissolverying control for output is desel-powered and both General Motors and specific by in Europe New control of General Motors and specific by in Europe New control of General Motors and both General Motors and specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in Europe New control of General Motors and Specific by in the Control of General Motors and Specific by in the Control of General Motors and Specific by in the Control of General Motors and Specific by in the Control of General Motors and Specific by in the Control of General Motors and Specific by in the Control of General Motors and Gen Opel subsidiary, and Ford have ontered the market—Ford perhaps a little reluctantly by offering an older version of the

up with demand at present. One in West Germany is for the diesel-engined version but sales

In France long-established diesel car maker Peugeot has been joined by Citroen with a version of its CX saloon, a development which was on the engineers agree on at least 25 way even before the two merged. The latest recruit to But for different reasons the where diesel cars account for the Peugeot fold, Chrysler European makes will not be about 5 per cent of the market Europe, makes a diesel car in

It is France which leads the because they account for about 6.5 per cent of the total new car market. Some 122,300 diesel cars were sold there in 1977.

This seems to be because the cost of both types of frel-pairel

penses and are expected to provide both the care and the fuel to power it from that amount.

This points us immediately to the underlying reason for the worldwide surge of interest in the diesel car-diesel engines offer much better fuel economy than equivalent petrol engines. Opinion varies on how much, but even the most conservative per cent overall improvement in fuel consumption.

efficiency advantage under partload conditions, meaning that stop-start urban motoring with way in Europe with diesel cars a diesel car returns consumption figures up to 50 per cent better engined car.

For the petrol engine is a bighly inefficient power unit. At

Latest of the German entrants and because in French compared out with the remainder lost in the diesel version of the Golf. This has been embarrassingly successful and VW just cannot keep towards their travelling expected on the Golf. This as "perks" to salesmen.

Solesmen are paid a basic sum (urban, stop-start motoring) the cessful and VW just cannot keep towards their travelling expected on the cooling water. The part-load (urban, stop-start motoring) the cessful and VW just cannot keep towards their travelling expected on the cooling water. The part-load (urban, stop-start motoring) the cessful and VW just cannot keep to the cooling water. The part-load (urban, stop-start motoring) the cessful and VW just cannot keep to the cooling water. The part-load (urban, stop-start motoring) the cessful and VW just cannot keep to the cooling water. The part-load (urban, stop-start motoring) the cessful and VW just cannot keep to the cooling water. efficiency is about 8 per cent.

Official tests in the U.S. showed that the VW Golf, known there s the Rabbit, when powered by a 1.5 litre petrol engine in urban conditions averaged 25 miles per U.S. gallon. With a 1.6 litre diesel engine the Rabbit achieved 40 mpg-a 60 per cent improvement. In highway conditions the figures were 38 mpg, 53-mpg or a 39 per

At the heavier end of the market, the comparisons between automatic versions of the Mer-The diesel shows its greatest cedes 280E with a 2.8 litre petrol engine and a 300D with a 3 litre diesel were equally revealing. There was a 57 per cent im-

provement between petrol and diesel in urban motoring (from 14 mpg to 22 mpg) and a 47 per cent beneat in highway conditions (from 19 mpg to 28 mpg). Fuel economy has become a

quadrupling of the price of crude oil after the 1973 Middle East war. Some countries tried to hold down petrol consump-tion while at the same time limiting demage to industrial users by widening the difference in price between petrol and diesel oil. In Brazil, Italy,

Japan, Mexico, Spain and Sweden diesel is less than half the price of petrol. Only in Brazil did the Government also introduce legislation which effectively makes diesel cars unobtainable - thus preventing private motorists from enjoying the benefit of cheaper fuel meant to stimulate industrial reflected in the price.

It is no wonder then that the latest addition to the diesel cars on offer comes from Fiat of Italy where the price of DERV is less than one-third of that of petrol.

However, it is in countries where fuel prices are high that diesel cars make the most sig-

before diesel shows savings performance characteristics through its superior fuel eco- which will make them suitable nomy. Thus West Germany is only for car, light commercial among the major producers of and marine applications — but diesel cars even though the that is not much of a penalty prices of petrol and DERV are as far as the big motor makers about the same.

In fact, there would be absoand lutely no contest between petrol recent events in this connection and diesel cars but for the fact was when Perkins, still the that diesel engines must cost more. They use complicated fuel injection equipment, need an uprated battery and starter at developing a small diesel for motor, and may involve detail changes to a car's technical specification. All this has to be

To make economic sense the breakeven point between the additional cost of the diesel engine and savings on fuel costs should take place while the first owner is still driving his diesel He has to recover the extra investment early enough to go on and gain the real benefit from lower running costs. It would not make sense for the UK motorist, for example, to pay an extra £500 for a diesel version of the car he wants,

> at to-day's fuel prices and then sell the car after two years. But the manufacturers themselves can either hold back or slimulate demand for diesel engined cars by their marketing policies. The add-on cost for various diesel cars is far from consistent throughout the world. Who can blame VW, for example, for adding 15 per cent to the price of the diesel Golf, where it has no hope of matching demand? In Britain Peugeot adds 15 per cent to the normal cost for a diesel version of the 504GL but in France the dif-

cover only 10,000 miles a year

Cost

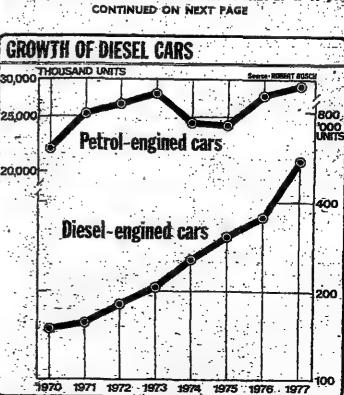
In future the real extra cost At Foggia in the south of of diesel engines will continue Italy, the Sofim plant is making In future the real extra cost to fall because economies of a small diesel engine for car, scale can be achieved if the commercial vehicle and in-diesel cars can run along the dustrial uses. So they are by same assembly lines as the no means lightweight. The 2.5 petrol versions. This already litre Sofim diesel in the 181 happens with VW in West Gerweighs 170 lb more than the many and Oldsmobile in the usual power unit, a 1.6- litre

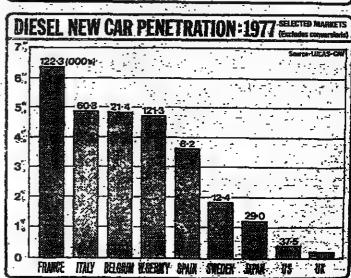
ferential is 20 per cent.

This introduces another im-portant factor about diesel will clear the tall diesel engine. edgines for cars. Many people in the motor industry believe reach an output of 1,000 engines that such diesels will be a day to become profitable. But derived almost universally from diesel versions of the new Fist petrol engines. The cylinder Ritmo are likely to appear in head is the only major special 1979 powered not by the Solim component in a diesel engine unit but by a dieselised petrol almost the same basic com-ponents for both petrol and units he has the versions of the R20 and R30 Hexibility of manocurre essential for volume production. He of the 2 litre petrol engine made gets economies of scale in at the jointly-owned Pengeot-production of the engine and Renault-Volvo plant at Douvrin.

More important, perhaps, nobody yet is willing to guess how far dieselisation of cars will go. Will it fade fast in a

Europe have doubled since the oil crisis (they were 180,000 in 1974) and predicted they would few years? Will there be a boom beyond the most optimistic expectations? Either way a volume producer using the same basic power unit, either petrol or diesel, will not be consist wrong footed. caught wrong footed. aught wrong footed. prediction about the U.S. He The major drawback to this said that at least 25 to 30 per





cost of both types of frel—perrol full-load (high speed, high mile critical factor for car makers nificant progress because the and DERV—are relatively high age motoring) it yields about 30 all over the world since the differential between the two French - made Peugeot diesel current levals the 1977 cutput engine in a Granada. Specify where there's space for an engine.

Caterpillar Diesel Engines are universally known for their dependability in Cat-built earthmoving equipment. And that same dependability is the reason why over 1,200 other manufacturers offer Cat Engines as standard or optional

The wide power range is available in Britain for trucks, buses, construction and farming machinery; mining, military and agricultural equipment; hoists; cranes; pumps; generator sets; boats; ships; land or offshore oil rigs; locomotives. In fact anywhere you have space for these compact diesels.

And Caterpillar's presence in the UK has been established for many years with plants in Glasgow, Newcastle, and Leicester.

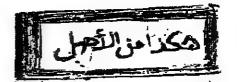
Extensive research and development programmes, such as noise and emission abatement. and expanding manufacturing facilities, prove Caterpillar's commitment to your future power needs. Worldwide, there are 975 Caterpillar Dealer out-

lets. So if ever that space you filled with a Cat Engine needs service you will find it close by. Wherever you operate.

For more reasons why you should specify Caterpillar. Diesel Engines, call (0753) 38835.



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Truck makers use the major share

more stringent noise and emis- Mitsubishi

Commits

† Approximate totals.

the truck and commercial vehicle fleets. It is a fact of life

that the higher the cost of fuel,

the more attractive diesel

of the truck business every-

the big trucks in a year.

Of course, at the heavy end

But now dieselisation is grow-

vehicles.

Land-Rover.

engines become.

THE MOST extensive use of diesel engines for commercial diesel engines is to power commercial vehicles. Commercial tion of its output of 30 to 500 vehicle engines account for hp engines in 1976-totalling nearly half the diesel industry's 510,000 must have gone to total turnover. In 1976 some power its own trucks, buses and 1.53m diesel-engined commercials.

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gest that demand for commergest that demand for commercial vehicle diesels in the West vehicle makers.

will advance at around 9 per cent a year up to 1985 at which stage around 3 m a year would 500 hp type produced in 1976 be required however, because (but with substantial sales to of the expected impop in passenger car diesel engines which are predicted to grow at around 190,000, and Leyland Vehicles, 25 per cent a year over the 100,000, are among the major period—the share of the total diesel market in volume terms held by confinercial output to the commercial output to the commercial vehicle makers.

Also in Europe Ford, with 500 hp type produced in 1976 (but with substantial sales to industrial customers and to its own tractor business). Fiat, are predicted to grow at around 190,000, are among the major producers.

In the UK the American system persists in that some engines will remain constant at customers really buy a diesel engine with a truck around it—

Jer-Benz, MAN, Daf, Volvo and Royce and Gardner, the Hawker Scania, for example, all make Siddeley subsidiary, as well as their own diesel power units, the American owned but U.K. Continental Europe seems to be Perkins.
Saviem (now also part of Thus in the UK Leyland

Daimler-Benz is almost certainly large Transcontinental with a the major manufacturer of Cummins engine.

cial vehicles were built in the Compared with this Perkins, were built in the Compared with this Perkins, worke Detroit Diesel.

Western world and the engines the world's major diesel engine themselves had a value of £2.4bm. producer seems to have suparticles and a value of £2.4bm. producer seems to have suparticles and a value of £2.4bm. producer seems to have suparticles and a following among among among the compared with this Perkins, stroke Detroit Diesel. output to the commercial

industrial customers and to its fairly recently was absorbed own tractor business). Fiat, 190,000, and Leyland Vehicles, group of the U.S.

around 41 per cent.

In Europe, except for the that is they specify that an UK, the lendency is for the truck inakers to manufacture their own diesel engines. Fiat, Berlief (part of Renault). Daim-ler-Benz, MAN, Daf, Volvo and Santia for example all make Siddeler subsidiary as well as

Continental Europe seems to de Savien. (now also part of Thus in the UK Leyrance Renault of France) which uses Vehicles offer, if required, a Rolls or Cummins engine in a Marathon truck, a Perkins in a Marathon truck of a Rolls cause this is a sector where Boxer or Mastiff truck or a Rolls they are difficult to find. But in the Routeman. Ford fits the

DIESEL SHARE OF VEHICLE PRODUCTION TRIBES

There are other problems hauliers must face and they expect the engine makers to deal with. As regulations on noise levels inside and outside the cab are tightened up so must some attention be given to the fact that bigger engines can make more of a racket. Restrictions on the emissions that an engine can put into the atmosphere are becoming more stringent and only the engine manufacturers can tackle this

Working towards a quieter, cleaner world

Dodge, the Chrysler offshoot, been tackled fairly easily but Diesel engine production in uses Perkins and Mercedes this inevitably would have led to 30hp to 500hp range. Cummins as well as its own two-

The existence of independent diesel engine makers with more years before engines will - John Derre 165,000 a following among some be required by law to meet Peugeut 160,000 customers has enabled a similar breed of independent truck sion control standards in International Harvester 140,000 makers to thrive in the UKamong them such concerns as ERF, Foden and, once upon a time, Seddon Atkinson which

Some people in the truck industry suggest that the independent diesel engine makers will gradually be squeezed out of the commercial vehicle business, possibly because it will cost so much to produce an engine which can meet the various legal requirements—on such things as noise and emissions. But the independents use precisely the same argument to prove to the truck makers that they should leave diesel engines to the specialist. manufacturing, Cummins and

There are other influences. too. For example, it came as no surprise to find that the latest in the range of trucks from Seddon Atkinson is powered by an International Harvester-made diesel rather than a Gardner like its predecessor.

But trends are only trends and there can be exceptions. The current exception to the general rule about the indepen-dents becoming less important in the truck engine business is Dorman, an offshoot of GEC of the UK, which is making strong attempts to break into the business and is selling to ERF. Another trend for which there

are few exceptions is the one which has seen hauliers asking for comparatively more horsepower under the bonnet. For example, not many trucks now stick at the UK legal minimum which is that there should be at least 6hp per ton.

problem.

It days gone by both noise and emission control could have

(Daimler-Benz) diesels at the a loss of efficiency in the diesel heavy end of its range while engine. Today such answers are Perkins General Motors' Bedford truck- not welcome because hauliers Daimler-Benz 510,000 making subsidiary can offer see an immediate impact on Ford their running costs as fuel is Isuzu 190,000 getting increasingly expensive. General Motors 191,000 be required by law to meet Peugeot

> Europe_ . A 32-ton truck of today nearly double the usual horsepower of ten years ago. The Rolls-Royce "Eagle" range. Cummins, and Leyland Vehicles are among the UK makers offering a 12-litre diesel power unit while Cummins has a 14-litre engine for heavy trucks.

Power ·

The demand for more power is felt in the medium part of the commercial vehicle market as well. Ford says that, although it offers a variety of engines for its 16-tonner, the "take" of higher (170 hp) engines has "increased noticeably." And where Ford offers either a four or six-cylinder engine on the same model of truck there is more demand for

the six-cylinder type. There is a similar pattern in the rest of Europe because. bigger engines can more easily cope with the faster speeds and the more intensive use trucks have to withstand today. A big truck has to earn £400 a week to pay its keep so it must be kept working as hard as kept we possible.

New diesel engines to cope with these problems will almost certainly be developed from the existing types. The diesel engine has not changed very

a firm conviction that the GM must meet this target if it answer to future difficulties is to comply with the Corporate faced by the commercial vehicle Average Fuel Economy (CAFE) diesel engine lies in turbocharging. This gives efficient, facturers have been told by large cars in its range, controlled combustion in the Washington to push up average. It has designed its engine which helps keep down both noise and emissions.

Leyland reckons it has spent more on turbo-charging develop- today's average of 18 mpg. ments than any other European charged engines in volume in its truck range. Now most of Leyland's com-

petitors are offering turbocharged engines in pursuit of
fuel economy.

In the U.S. the low cost of fuel
has held back dieselisation of

Unitst 560.000

diesel trucks will take 15 per cent of the Class 6 market by 1980, 23 per cent by 1982 and 35 units.
The European truck makers 108,000

Caterpillar 90,000 The types used in commercial the States.

Renault has lined up a deal with Mack Trucks, part of the Signal Companies conglomerate, ‡ Includes Austin-Morris and for Class 6 trucks built in France to be sold bearing a

Mack badge.

Volvo is linked with the Freightliner Corporation, a subsidiary of Consolidated Freightways, to cover marketing in the U.S. and Canada of trucks built

Iveco, the joint concern 80 where, including the States, per cent owned by Fiat of Italy and 20 per cent by Kloecknerdiesel engines are almost universally used because fuel Humboldt-Deutz of Germany, is consumption is so great and setting up its own distribution network in the States. many are the miles covered by

While these Europeans will ing fast in the mid-range vehicles in the U.S., what the Americans call the Class 6 he sending built-up trucks to the U.S., a different approach will be employed by M.A.N. of Gertrucks weighing between 9 tons many (Maschinenfabrik-Aus-and 11.8 tons. In 1977 only 8 burg-Nuremberg) which has per cent of the trucks sold in this category were diesel-Trucks of America. Between powered, involving 11,000 out of them they will develop a new some 136,000 units. But growth middle-weight diesel truck. from now on is expected to be M.A.N. hopes to be able to in-

hope to gain something from let the new opportunities go un- diesel engine powered. this trend and a handful of contested to the Europeans, of

> vehicles. And the engine manufac- 41 per cent of all diesel engined turers themselves, notably trucks in the States. Cummins, Caterpillar, and General Motors through its Detroit Diesel Allison engine
>
> Finally a word about what is almost certainly the most-ambitious diesel engine project offshoot, are developing new in the world today, products to meet the growing In the Soviet Union at products to meet the growing demand. They are, of course. Maberezhnyje Cheiny, near the major producers in Western world terms already. In 1976 country, the Kama River project involves an amalgamation of diesel engines in the 30 to 500 seven plants which the Russians hp range, Cummins 120,000 and say will be capable of producing General Motors 191,000. The 150,000 trucks a year and also hp range, Cummins 120,000 and

(1976 output of 30 to 500 hp used at the purpose-built plant engines: 140,000) along with which will be providing engines

ing a new plant designed to start Comecon countries. production in 1980 of up to

corporate some European com- litre diesel engine specifically International Harvester, which claims to be the world's largest commercial vehicle sive products such as the of its own trucks and is another manufacturer, is predicting that engines and axles it has indication of the GM conviction developed as part of a joint that diesels are the answer to venture wifh Volkswagen could many of the legislative probbe competitive in the U.S. as lems the automotive industry per cent by 1985 or about 70,000 long as the dollar's value does faces in the States. The group out of a total market of 200,000 not slip too far. has said that by 1985 more

indigenous American than 30 per cent of its light diesel engine producers will not commercial vehicles will be Recent events have also percourse. The major producers in suaded Cummins to re-enter them are already well into pro-jects aimed at gaining some-the U.S. of Class 6 trucks, the medium-duty market with a thing more than a footbold in Ford, General Motors and Inter-derivative of one of its heavy national Harvester, are all tak- duty engines. This is being ing steps to improve their offered with a range of 1979 position in diesel-powered Ford trucks. Currently Cummins engines power more than

group recently sold its millionth 220,000 diesel engines.

The current aim is The current aim is for this

In the Class 6 truck range, scale of production to be Ford uses a Caterpillar diesel as reached by 1982. Daimler-Benz does International Harvester and Fiat technology has been some of its own.

GM's Detroit Diesel is buildin the Soviet Union and other

Kenneth Gooding

Car sector continued from previous page

requirements. American manufuel consumption across their model ranges to 28.5 U.S. mpg by 1985 by gradual stages from

group and since as long ago as is the best means available to 1968 has been using turbo- help lift its CAFE while at the same time offering the customers a six-seater car. "And GM aims to preserve the six-passenger car." Mr. Estes exclaimed.

GM must meet this target if it that the petrol engine can be

It has designed its own stratified charge engine which enables a "leaner" petrol mixture to be used (or one that is not so highly concentrated), and GM feels that the diesel option claims that it will use around 20 per cent less fuel than a

conventional petrol engine.
Called the Proco, the Ford design has recently moved out of the theoretical stage of

part of the catalyst which controls emissions to be dispensed with-and the catalyst is also

expensive.

Ford's view remains that the diesel engine has characteristics which many drivers will not say that there is no possibility tolerate. And in the U.S. in particular, the use of the diesel does not help the de-weighting process which is going on. Not only are diesel engines heavier

much in the past 25 years after, cent of his company's cars will the diesel engine outweigh the petrol engines of today because the short term is the pressure all.

At Leyland Vehicles there is: 1985.

The pressure fuel economy advantages and it it uses a complex fuel injection the American manufacturers system which Food has desired. In the U.S., bowever, the use and emission legislation at the adequately improved so that the of the Proce engine might not same time. This is proving group can meet the CAFE add to the on-the-road cost of difficult with conventional requirements while keeping a car because it would enable petrol engines. But the diesel engine does not solve the problem completely because nitrous oxide emission (NOx) is difficult to design out of

> Many people in the industry that diesel engines can meet the 1.0 NOx (1 gramme of nitrous oxide a mile) which becomes effective in 1981. But it is also widely believed that the NOx

The 80's could be a quiet time for diesel engine users

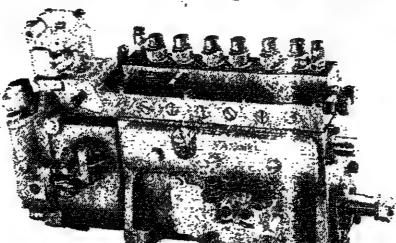
All over the world, diesel engine noise and pollution legislation is tougher than ever before. And even more stringent regulations are forecast for the nineteen eighties.

To meet these predicted controls - and to assist dieselengine manufacturers in answering customer demand for higher specific power-Lucas CAV has been developing new fuelinjection systems. The work covers rotary and inline pumps, injectors and fuel filtration units. For cars, trucks, tractors and everything else that diesel engines are used for today. Take the Maximec, for example. It is the latest CAV inline fuel injection pump, capable of fuelling engines of up

to 100 bhp per cylinder.

The higher injection rates and shorter injection periods it allows make a significant contribution towards reduced exhaust emissions.

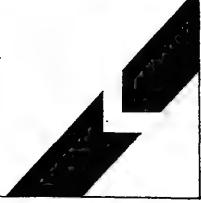
Equally important, the Maximec's robust design features have led to a marked reduction in noise levels. It is some 5-8 decibels quieter than competitive pumps of comparable performance. Which puts it well within the estimated requirements of noise legislation right



into the 1980's. Quiet times ahead for diesel engine manufacturers? The Maximec, and many other developments like it in the CAV product range, turn what could be a threat into a promise of continuing business success.

Lucas CAV

Lucas CAV Limited, London W3 7SS.



Key questions in the marine sector

TWO QUESTIONS dominate the marine diesel engine industry today: the short-term prob-lem of the shipbuilding recession—which is not expected to bottom out until 1981—and the longer-term uncertainty of the supply, price and quality of fuel oils.

So far as the recession goes, all the engine builders have now had four years to plan for what are certain to be two to three very lean years indeed. As all the major European manufacturers have extensive non-marine engineering in-terests, they have followed the obvious course of switching resources to these areas.

For some of the smaller companies and the shipyard licensees it is far less easy to diversify and a trail of redundancies in engine-building shops is certain to follow more widely publicised and contro-versial job losses in shipbuild-

The impact of the recession has, of course, been much more complex than this. It has stopped dead in its tracks the shipping industry's pre-1973 interest in ever-larger oil tankers and ever-faster container ships, and has thereby switched the engine designer's prime focus away from the remorseless search for higher specific output per cylinder to (in rough order of priority), fuel economy, reduced main-Totals tenance, ability to burn lowquality fuels, extended automation, greater standardisation and higher environmental standards.

Trietste of Italy; and Doxford of reduction of operating costs for Britain), designed to encroach its slow-speed engines of 12 per on a part of the smaller ship cent.

Innovation

to be in greatest demand in the type.

next few years—that is smaller this type.

At the heavier end, new on to the

dramatic innovation, although market in preparation for better there is a steady supply of dramatic claims about the fuel a newcomer, the RLA 90, and conservation capabilities of on a rather different tack. GNT. various designs.

MERCHANT SHIP MAIN ENGINES COMPLETED IN 1977

(Vessels over 2,000 dwt).

| Y | MEDIUM AND HIGH SPEED | ENGINES | - | | - |
|---|---------------------------|---------|-----------|---------|--------|
| | | namber | | | market |
| , | | · · of | built by. | | share |
| 5 | designer/manufacturer | engines | licensee | (000) | : : % |
| , | Pielstick (France) | 172 | 91 | 740 | 29.8 |
| • | MLA.N. (W. Germany) | - 71 | . 38 . | - 608 - | 34.2 |
| , | Mak (W. Germany) | 59 | <u> </u> | 216 | · 8.6 |
| | Deutz (W. Germany) | 43 | 11.0 | 152 | 5.1 |
| | B & W (Denmark) | 43 | 4 | 117 | 4.7 |
| | Sulzer (Switzerland) | 25 | 21 | 101 | 4 |
| | Mitsubishi (Japan) | 21 | 19 | 96 | . 3.8 |
| • | Stork Werkspoor (Holland) | 13 | . 4 | 90 | 3.6 |
| | GMT (Italy) | 16 | 2 . | 70 | 2.8 |
| | MWM (W. Germany) | 29 | _ | 57 | 3,2 |
| [| Hanshin (Japan) | 7.2 | _ | 41 | 1.6 |
| 7 | Nohab Polar (Sweden) | 13 | 2 | 34 | 1.4 |
| | Normo (Norway) | 10 | _ | 28 | 1.1 |
| | Daihatsu (Japan) | 16 | _ | 27 | 1.1. |
| • | Others | 66 | 3 | 126 | 5.1 |
| • | Totals | 540 | 199 | 2.513 | 100 |
| • | | | | | |
| | GAS TURBINES | _ | | | |
| | Pratt and Whitney (U.S.) | 5 | _ | 134 | 71.8 |
| | General Electric (U.S.) | 3 | _ 1 | 53 | 28.2 |
| i | Totals | 8 | 1 | 187 | 100 |
| | LOW SPEED ENGINES · | | | | |
| | Sulzer (Switzerland) | 307 | 283 | 4,191 | 52.1 |
| | B & W (Denmark) | 174 | | 2,374 | 29.5 |
| | M.A.N. (W. Germany) | 69 | 59 | 977 | 12.2 |
| | Mitsubishi (Japan) | 20 | 29 | 187 | 2.3 |
| | G.M.T. (Italy) | Ţ | - | 163 | 2. |
| | Doxford (UK) | 6 | _ | 92 | 1.2 |
| | Incherified | 5 | -5 | 65 | 0.7 |
| | | | | | |

Source : Motor Ship.

Britain), designed to a part of the smaller ship on a part of the smaller ship market normally serviced by medium-speed designs.

These engines, broadly in the shipbuilding appear to be continuously hardening, there is little likelihood of major changes in the balance of power Engine-builders have also, all basically scaled-down vernaturally, tended to concentrate their development ideas upon the range of engine sizes likely to be in greatest demand in the turbo-charging for an engine of this type. in the industry and a market share analysis (to be published by Motor Ship, next month) is not expected to show any major

This has not been a period of designs have come on to the has unveiled a suitable power

especially where more than one Agreement

There is general agreement that the fuel issue will dominate the thinking of shipowners and therefore engine designers for some years to come. Fuel costs now account for well over 50 per cent of an ocean-going ship's operational costs and even taking into account capital and the point, steam and management costs on a high-discal contract which has cest to a controversy which has easily which has counted for 20 years. Yet, as with a large number of energy distributions in the transport world, the practical ship operational costs and even taking into account capital and this point, steam and management costs on a high-

costs is put at 20 per cent. An approximately one-third on a misleading basis. advantage in fuel economy gave the diesel engine its fundamental edge over steam turbines in the 1960s, but with the marine world resigned to the fact of having to accept gradually deteriorating fuel grades (oil with more chemical impurities and of greater viscosity) as prices rise, supplies become as prices rise, supplies become tighter and refining processes become more efficient, the equations are starting, at least in the opinion of some, to alter.

In October (1978), only 64 of the 1,696 ships on order in the Triestse of Italy; and Doxford of reduction of operating costs for Britain), designed to encroach its slow-speed engines of 12 per on a part of the smaller ship cent.

World specified steam turbine engines, although 35 per cent of the tonnage in the world fleet is steam powered. The disparity between these two figures' simply reflects the rapidly depleting large tanker order-book compared with the substantial tonnage of that class already, built with steam tur-bines because of the need for greater power both for propulsion and cargo discharge.

Unsurprisingly, the most vigorous proponent of the renascence of steamships theme is the world's biggest marine steam turbine manufacturer, Stal-Laval of Sweden. This company's "very advanced propulsion" programme is based on a series of radical innova-One of the most interesting general trends of the last 10 for a very large, nonths has been the amergence f a whole family of designs to whole six low-speed engingments and whole six low-speed engingments and wain of Denmetric manners. MAN of Company Mitter which of Japan: Grandi Manner of Jap

The main advantages in fuel.

medium speed are lightness and compactness added to a higher has also been working on the General Electric in America degree of operational flexibility, possibility of returning to coal-but the problems are a require as a marine fuel for steam turbines, again probably using a fluidised bed boiler of the type

engine is used in a ship, a pro- now common in land-power liferation of moving parts and engineering, but still unknown therefore of maintenance costs. at sea. Babcock and Wilcox of Britain is co-operating with Stal-Laval on the fluid bed work. These factors have added new. st to a controversy which has

At this point, steam and diesel camps tend to hurl fuel consumption figures at each management costs on a high-crew cost flag such as that of Norway, the proportion of the other, each side accusing the other of presenting his statistics

and Trading a large, diversified shipping company with experience of both propulsion modes, says its figures showed motorships with an 18 per cent operation costs advantage over steam in 1977, compared with a two per cent advantage in

Shipowners cannot afford to ignore such calculations when the larger companies' annual fuel bills range between £30m and £100m, especially in times as hard as now. Moreover, when times are hard and funds are short, shipowners are ill-inclined to take risks with new marine engine technology.

An odd sideline in this debate, however, is always the U.S., which retains a strong steam turbine industry and in con-sequence, a fleet where diesel engines account for only 4 per cent of active ocean-going tonnage.

Because of fuel cost pressures, American owners have begun to force a change in this pattern (over one third of U.S. vessels on order are motorships) and the U.S. Government granted a temporary relaxation of laws preventing the import.

MERCHANT VESSELS ON ORDER

| | | (October, 1849 — ASSERTANCE Transfer at | |
|---|--------------------------|---|---|
| - | MOTORSEIPS STRANSBIPS | Tankers Other than tankers NoDWT RP No. DWT RP 222 8.3m 2.62m 1,410 23.5m 14.4m 54 9.1m 2.2m 10 0.5m 0.3m | No. DWT HP 1,632 31.8m 17m 64 1.6m 2.5m |
| | TOTAL | 276 17.4m 4.8m 1.420 24m 14.7m | 1,696 41.3m 19.5m |
| | | | Source: Motor Ship |

Whether the turbine manifacturers can reverse this mic reasons for many ships in
recent trend in the light of the today's market the diesel comnew fuels debate remains to be panies are adamant that the
seen—they have certainly not technology is on hand to design shown any lack of intent.

marine diesel producers are going to be difficult to dislodge from their present supremacy. They have experience of instalments in virtually all ship types and a record in the past five years of continuous, if unspectacular, product improve-

Although moforships can be

But in worldwide terms, the duised.

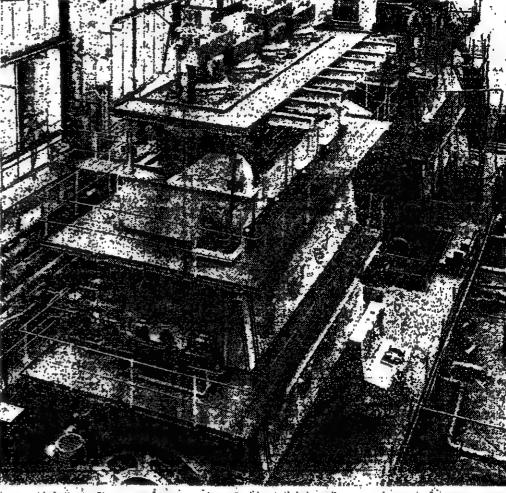
end of the century it is impossible to make predictions. Will nuclear propulsion, already proven technologically for war-ships and in a smaller number of showpiece merchant vessels, have become politically and en-vironmentally acceptable?

Perhaps less distant into the criticised for example, for future, will gas turbines and adapting less efficiently than gas/diesel combinations offer steamships to the slow-steaming power and environmental ad-

vantages to justify the extra-fuel cost? Certainly, these forms of propulsion could be of in-terest for specialised functions such as ice-breaking gas cor-riers, but it seems unlikely that the next 20 years will see & dramatic overthrow of diesel. Whether in that period further than the second to the second that t

bines will establish a foothold to re-establish their dominance in the next century must de pend upon the success of the development programme now, quite properly, being inten-sively pursued by the turbine manufacturers in Sweden and the United States.

Ian Hargreaves



A recent Doxford opposed-piston engine on test in Sunderland. It is the only all-British marine engine built at the British Shipbuilders works

A growing demand in small boats

"Small," in this context means engines of up to about 300 hp—the types which are used to power pleasure boats, boats, customs launches, and similar vessels found along every inhabited coast of the

In Europe the demand for small marine diesels is estimated to be rising at a comfortable 5 per cent a year. But in the developing countries the rate of growth is far higher. Even the diesel makers have been surprised by the volume of new orders from Third World nations during the

There are two reasons. Some countries—notably Sri Lanka, Taiwan, and South Korea—have cashed in on their plentiful low-cost labour coupled with skills—and often the avail-ability of local woods—in go into the pleasure boat business on a production-line basis. They are finding that they can under-cut boat companies in the developed nations by about 20 per cent. Virtually every new pleasure boat built in the

Policy

The second reason for brisk demand for diesels in the Third World is the newly fashionable policy of reinforcing local fishing industries by providing better equipment for inshore fishing. A new market has been created around parts of the Mediterranean, in Africa, Asia, and the Far East for robust reliable diesels of the simplest possible construction for installation in fishing craft

Perkins, which probably sells nore small marine diesels than any other company, is now manufacturing in 18 countries and sending nine out of ten of its British-made engines overseas. It has produced a special
three-cylinder model for inshore fishing craft and is running a series of intensive diesel
regarded by boat-owners as ning a series of intensive diesel regard courses at Peterborough for unacce visiting fisheries officers from noisy.

oping nations.

But now a revolution is world market worth £130m on in the design of

fishing and commercial craft construction, and the bigger pleasure craft. Boat owner The market splits as follows ing that dies (units a year):

Rest of world .. .40,000 There are still a few com-

trusted engines designed purely for marine propulsion. Usually they are heavy, slow-revving, and designed for a life-time of arduous servica Britain's Thornycrofts and Kelvins are But the volume sales are

going to the manufacturers in two other categories. Com-panies such as Perkins, Volvo and Mercedes have made their reputations with engines which are mass-produced (and which may derive from a basic design also used in other desei applications) but are built up from the first nut and bolt as the second of the contract of t marine engines. The second category covers the great and growing business in standard

growing business in standard diesel engines built on production lines—usually for truck use—and then "marinised." British Leyland and Ford engines are both marinised in Britain and Europe.

Some companies are starting to straddle both philosophies. Petters, a Hawker Siddeley subsidiary, recently produced two lightweight marine diesels—the 6 hp Mini-Six and the 1½ hp Mini-Twin—which began life on the drawing board as pure marine engines, But in order to extend the product range into higher horse-powers Petters is now buying and marinising the highly successful. Volkswagen Golf diesel.

An elusive additional market

An clusive additional market for marine diesels now exists-which the manufacturers are which the manuscurers are divided about and do not yet fully understand. That is the potentially wast market for amail lightweight diesel engines, ranging from 5 hp fo 30 hp for family market, and dutherts.

ONE SECTOR of the market a year for marine diesels in the diesels. The two new Petters which the diesel engine manuscript of the diesel engine manuscript of the diesels of the diesels. The two new Petters are proving world trend-setters. It is expected to con- By conventional standards they to grow world-wile in a useful, thus to grow vigorously, are extremely light, thanks to finot spectacular, fashion is Engines in that size range cuter the widespread use of alumithe small marine diesel.

The two new Petters which the diesels. The two new Petters are proving world trend-setters. It is expected to con- By conventional standards they to grow vigorously, are extremely light, thanks to finot spectacular, fashion is for the needs of most inshore nium alloy die-castings in the

. Boat-owners are now accept ing that diesel propulsion is a feasible proposition even for racing craft where weight is very important

Several manufacturers are developing lightweight small diesels to compete with the Petters, the Japanese Yanmar and a few other designs sharing the market at present. The potential prize is big. The diesel makers believe they can capture the under 30 hp marine market from petrol if they can get their new designs

right.
Their biggest single sales argument is of course the com-parative safety of diesel fuel

compared with petrol.

BMW of West Germany is expanding into the marine diesel business in style. A new marine engine factory has been built in Bavaria and a range of engines ranging from 6 hp upwards is being developed. At the same time it looks likely that that company's utomotive experience with 5 ch techniques as turbo-charging will be applied to new designs of high-revving and powerful, yet light-

weight, marine diesels.

By the time a full range of under-30 hp diesels acceptable for small boats is on offer from the major manufacturers it is expected that the designers will he nearly ready to be nearly ready to produce a further generation of engines. They will be the modern equivalent of the multi-fuel

Designs

Designers are calling them "wide cut" fuel engines, meaning that they will be able to run on a wide-cut fuel fraction sliced from crude oil during the refining process. That is seen by some companies as the best contribution the diesel many facturer can make towards. greater economy in the use of the world's oil sumplies Such engines will need a form

of ignition system unlike the pure diesel concept and will be something of a hybrid of diesel and petrol engine design

changes from the 1977 figures

Medium speed engines (i.e.

engines operating at above 220

revolutions per minute) accounted for a little over 20

New World Records

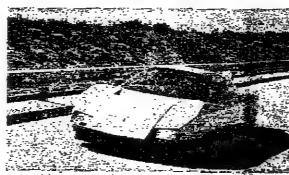
by Mercedes Turbo-Diesel fitted with Nueral-Pistons

tabulated on this page.

revolutions

A further nine world records have been established by the new Mercedes C 111-III five-cylinder turbo-charged diesel engine using Nueral oil cooled pistons. Nueral oil cooled pistons were also used in the Mercedes C 111, the record breaking car of 1976. Once again Nueral pistons have given an outstanding performance under extremely severe operating conditions. The Mercedes OM 617a engine now in current production is also fitted with Nueral oil cooled pistons, thus demon-strating Alcan's continuing success in the field of piston design and development.

oil cooled piston



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Exhaust gass

Niconing air

Exhaust gass

In practice, however, it has often made engines less reliable.

nan

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To make it we didn't just fit a turbocharger to an engine. We redesigned our engine to fit a turbocharger.

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Redesigned pistons with iron inserts improve oil consumption, and stronger castings eliminate head and crank case problems.

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What's more, many of these improvements have been carried over into the rest of the 98 series engine range.

So they're all better. Tougher and more reliable than ever. From the 69bhp 4-98 naturally aspirated engine through to the 137bhp 6-98 Turbo.

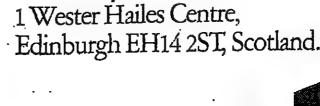
And like all our trucks, the 98 series engines are backed by the biggest Parts and Service network in the business.

Get in touch with your nearest Distributor.

And see for yourself how well the 98 series engines power the FG, Terrier and Boxer to perfection.

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Leyland Vehicles Limited, Medium Light Vehicle Division,





The diesel engine industry is an international business,

with most of the leading Japanese, European and American companies

the state of the industry in the main producing countries is examined, along with profiles of some leading companies.

Strong point of Britain's

engineering industry

competing actively in each other's markets. On this and the following six pages

23.000.000 HP in service or in citter S.E.M.T. PIELSTICK diesoi engines.

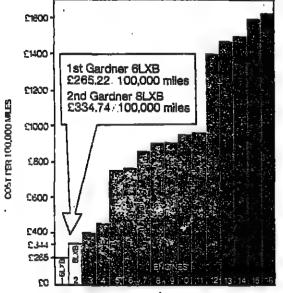
PA type from 750 to 5.300 kW. PC type from 2.220 to 19.980 kW.

S.E.M.T. PIELSTICK

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...the name on the world's finest filters. Locker Air-Maze Limited, P O Box 17, Folly Lane, Warrington, Cheshire WAS SNP

DIESEL ENGINES are among the strong points of the British engineering industry. It is one of the few sectors in which UK production matches or possibly exceeds that of West Germany. In Perkins Britain has Europe's largest manufacturer of diesel engines. Most of the other UK-based producers are strong in their particular sectors of the market. In contrast to some other areas of mechanical engineering, there is no lack of powerful and well-financed comwhich have invested heavily in diesel engine manu-facture and are continuing to

diesel engine market has tended to decline in recent years. Whether this trend can be reversed depends on two factors, one of which is outside the direct control of the engine manufacturers. The first is the competitiveness of the UKbased original equipment manu-facturers (OEMs) who instal engines in machinery. The second is the ability of the engine manufac-turers to establish worldwide sales and service networks of

In the range up to 30 hp Britain is well placed, having two companies, Lister and Petters (both part of the Hawker Siddeley Group), with a worldwide reputation in their field. There is strong competi-tion from the Italians and Germans, while Japanese com-panies, led by Yanmar, have done well in the Far East and other developing countries. Kirloskar of India is also a significant competitor.

The biggest battleground in the next few years is likely to be in the 30-500 hp category. Several of the major engine manufacturers are directly asso-clated with OEMs who provide the base load of their business. Thus Perkins is owned by Massey-Ferguson and about 40 ner cent of its UK engine pro-

| WORLD OUTPUT | |
|--------------------------|-----|
| (per cent) | |
| Commercial vehicles/pas- | _ |
| Senger cars | 1.2 |
| Construction confirment? | _ |
| , industrial/marine | 1 |

UK diesel engine applications decade. (30-500 hp—per cent) Agricultural Construction/marine/indus-

Ferguson equipment. Ford, the second largest diesel engine manufacturer (it makes around 250,000 engines a year in the UK compared with Perkins' worldwide output of some 550,000), has a large captive outlet in its own tractors and trucks which has enabled it to build up a growing industrial engine business with outside customers. The Dorset range covers a power band from 65 to 250 hp and the York range goes from 54 to 80 hp.

Even those engine producers which do not have a captive outlet for their products depend for an important part of their sales on UK-based manufacturers of original equipment. If. for example, truck makers like ERF, Fodens and Seddon-Atkinson were to disappear from the scene because they could not compete against foreign suppliers like Volvo or Daimler-Benz, this would be a serious blow to the engine suppliers Cummins, Gardner and Rolls-Royce Motors. If major construction equipment makers like J. C. Bamford or Aveling Barford either went out of business or were swallowed up by large U.S.-based companies with their own engine-making capacity, this too would weaken the foundations of the British diesel engine industry.

Concern

So the fact that about half the UK market for heavy-duty trucks is supplied by imports is a matter of serious concern for the engine builders. Equally, the British motor industry has not so far made much of a contribution to the development of diesel-engined cars—though in this case the engine is more likely to be made by the vehicle manufacturers than by outside engine suppliers. The one end-equipment sector

in which Britain is unusually strong-farm tractors-unfortunately happens to be the one with the least exciting growth prospects. Britain is easily the largest exporter of tractors, but the principal manufacturers, including Perkins' parent Mas sey-Ferguson, have been hard hit by a weakening of demand in several key markets. Most forecasters predict a rather modest growth rate for diesel engines in tractors and related applications over the next

In generator sets, another important outlet for diesel engines, there is a strong UK-based industry, with companies like Dale, Petbow and Dawson Keith enjoying a substantial export business; several of the

PRINCIPAL UK MANUFACTURERS

Company Vauxhall/Bedford Cummins Engine Rolls-Royce Motors Leyland/Rover/Austin Morris APE-Allen APE-Crossles

Dorman Paxman Ketvin Petters Mirriees Blackstone Doxford

Parent Massey-Ferguson (Canada)

General Motors (U.S.) Cummius Engine (U.S.)

Amalgamated Power Engrg. General Electric Company

Hawker Siddeley

British Shipbuilders

engine producers also their own generator sets. Here too the industry has been affected by problems in a few important markets, including Nigeria, Iran and Iraq, but the long-term future for this sector of the business—and the compe-titiveness of UK-based manufacturers-seems sound.

direct exports of engines to overseas-based OEMs, but in the major industrial countries it is not easy to wean local groups away from their national suppliers. Sometimes it is necessary to set up local production a new Volkswagen van. The

also a number of smaller truck own engines; SISU in Finland, for example, buys engines from Leyland and Rolls-Royce Motors in Britain. The hope is that Continental

truck manufacturers which now use their own engines, like Renault Industrial Vehicles in There is of course scope for France, can be induced to switch to an independent engine supengines to Ford for use in the Transcontinental truck, which is in Amsterdam. assembled British engine manufacturers are discussing possible supply facilities—as Perkins did in arrangements with several Con-Germany to supply engines to tinental truck companies.

From time to time there have least nationalistic of the OEMs been suggestions that the UK-are probably the American-owned sector of the dissel owned companies which operate engine industry could benefit



The Liner Giraffe powered by a Ford 2711E four-cylinder diesel engine

Rolls-Royce acquired a minority holding in Gardner and later made an unsuccessful bid for Fodens, the heavy truck company, some Government officials were attracted to the idea of a threeway link-up leading to an integrated truck and engine manufacturer, a small-scale version of Detroit Diesel in the U.S., which supplies engines to its parent company, General Motors as well as to outside customers. But the Gardner case Fodens was seen more as a means of diversification for Rolls-Royce than as a captive outlet for its engines.

With Gardner now firmly in the Hawker Siddeley camp Rolls Royce Motors is pursuing an inspecialist supplier of engines to automotive and non-automotive markets. The range is from 200 to 1,200 and the new Vee-form engines coming on stream at the Shrewsbury factory, comple-menting the established in-line range, will widen Rolls-Royce's markets. Capacity, now around 6,000 engines a year, is expected to rise to more than 10,000

engines in the early 1980s.

Mergers between UK-owned ingine manufacturers are probably not very relevant to the industry's attempts to expand its share of world markets. It is interesting that GEC and Hawker Siddeley, both of which have several diesel engine manufacturers within their portfolio, have not attempted to rationalise them; each company remains responsible for designing, making and selling its own products. Especially in the higher horse-power ranges, the diesel engine industry affords opportunities for the smallolume specialist who carefully cultivates his chosen customers; APE-Allen, the Bedford-based subsidiary of Amalgamated Power Engineering, is one such company, with desel engineering from 400-4100 hp. Its sister company APE-Crosley.

What may make more sense than mergers between British companies are acquisitions of. or partnerships with, averseas or partnerships with the UK-based diesel engine companies as a means of that the UK-based diesel engine developing new markets. It was manufacturer must do all he this thinking that led GEC to can to help the end-equipacquire Baudouin in France and ment makers improve their Alco in the U.S. Hawker Siddeley, too, has made acquisi-tions in the U.S. The diesel engine manufacturer needs to be in a position to service his existing OEM customers, who

a Pielstick licenses.

from mergers — to achieve may be exporting their equip-ment throughout the world, sad to develop new CEM business both require a substantial including local manufacturing facilities.

Yet however successful the UK-based engine makers are in developing direct exports, they need a strong home hase in the form of British OEM customers. who can hold on to the bulk of the domestic market and com-pets internationally. In this context the future of the motor-Board rejected Rolls-Royce facturers in particular is of Motors' approaches and in any crucial importance. Both Kord and General Motors (Bedford) have made Britain their main European production base for commercial vehicles and this is unlikely to change.

But the outlook for Leviand Vehicles, which has just under gone another change of top management, is less certain There has been talk of partner ships between Leyland Vehicles and other European truck manufacturers; it is not clear how such an arrangement might affect Leyland's engine produc-Another possibility in view of the cash limitations to which the whole of BL is subject, is that Leyland Vehicles could gradually increase its offtake of engines produced by outside suppliers, rather than investing in major new engine developments of its own.

Disappointing

In the meantime Leyland is actively developing its engine under the "Power Systems" banner. The aim is to provide from the UK a third force in world markets alongside Perkins

It is clearly in the interests of the diesel engine industry that the competitiveness of the turers should be improved and the tide of imports pushed back. It is disappointing that while including IVECO, Volvo and Renault, are making plans to sell their medium and heavy-duty makes larger engines for marine their medium and neavy-duty and stationary applications, it is British participation in this British participation in this market Equally, it is important that BL's belaied entry, or reentry, into diesel-engined passenger cars should be successful The conclusion seems to be

performance, while at the same time spreading his risks through the development of new OEM customers overseas.

Big changes ahead in the UK marine sector

Britain is now entirely nation, engines and British Shipalised, with the takeover in builders similar designs from hardly a matter for comfort. for BS companies are expected APE builds engines of its own to bottom out at around spite of a chronic shortage of design and under licence to 320,000 bhp in 1979-80, but recover to 450,000 bhp by 1982-83.

These companies - Barclay Curle, J. G. Kincaid and Scotts Engineering on Clydeside, and challenge. Doxford, George Clarke/NEM and Hawthorne Leslie on the North East Coast — are now part of British Shipbuilders (BS). Their only domestic com-betitor in the slow-speed field shipbuilders for exceeding its Harland and Woolf of This proved to be a legally Belfast, also State-owned, and untenable course of action and

expected to occur windows. Mirrlees Blackstone, are seek-severe convulsions, especially as ing new ways to press their the BS companies were taken campaign. Their fear, obvious over at a time when their order books were being depleted to British Shipbuilders will per-

hand.

So far there have been two important developments since nationalisation. The first was companies have relied on the the decision to take Barclay Curle, the second smallest of their business up to now.

The BS companies with an annual capacity of 72,000 bhp, out of engine building capacity more than three times altogether. This company is now in excess of demand, the private altogether. This company is now in excess of demand, the private in the process of moving into BS's general engineering divi. increase in domestic capacity, sion and for the foreseeable. The effect, they argue, will be future will be working as a 10 destroy two private sector. subcontractor for defence pro- jobs for every one saved within

ducts to Vickers Engineering British Shipbuilders.

The second big step was the separate decisions by British Shipbuilders has not won any

funds. BS has invested in new plant to allow Hawthorn Leslie lead its medium-speed

The private sector of Britain's marine diesel industry reacted strongly to these licensing developments and explored the possibility of suing British

Belfast, also State-owned, and licensed to manufacture Burmeister and Waln slow and medium-speed engines.

untenable course of manufacturers, the private manufacturers, which include such famous names as GEC, Amalgamated names names as GEC, Amalgamated names n medium-speed engines.

This major reorganisation Power Engineering (APE) and the Hawker Siddeley subsidiary expected to occur without Mirrlees Blackstone, are seekthe point at which they now suade shipowners placing conhave only three months work in tracts with its yards to specify hand. tracts with its yards to specify engines built in its own shops,

sector is dismayed at any

The changes so far in the industry since nationalisation are likely, however, to be dwarfed by the changes to come. British Shiphuilders will in the course of this year he attempting to apply the terms of its first corporate plan.

Planning

Planning has to start from the fact that most of the enginebuilders are financially weak and have suffered in the past from chronic underinvestment. Before nationalisation the UK Government displayed precious little interest in its marine engine industry and by a process of too little investment and research too late effectively killed off Britain's marine steam turbine industry. British power engineering companies like GEC and Babcock and Wilcox retain some interest in the marine field but certainly Britain would be poorly placed to take any share in the revival of interest in steam turbines which some sides of the industry are confidently predicting.

On the diesel engine side British Shipbuilders' five companies (excluding Barclay Curle) retain a physical capa-The second big step was the separate decisions by British Shipbuilders and Harland and Wolff to attack the medium. and APE at least finds itself speed marine diesel market with one of the healthiest order.

So far, however, British per annum, but present labour successfully developed, tested recover their former states. But and now received seven orders the property of the property or and now received seven orders.

Medium-speed output is projected at between 21,000 bhp and 42,000 bhp. It is clearly possible on the

basis of these projections—assuming they are accurate on the existing pattern, with a and Doxford believes flat its need to shed only a small amount of labour for a temporary period of about two veges executives, however, BS

favour using the

likely to prove politically acceptable to Britain's Labour Government, is a further option under ment, is a further option under study to close down the Doxford company in Sunderland, with the loss of 1,000 jobs, and put production of Doxford-designed engines — the only pure British slow-speed designs in existence —into Hawthorn Leslie.

To this haveness it would be a longer the terms of the ES corporate plan to take further the research into law quality fuels to take further the box quality fuels.

With a world market share into Hawthorn Leslie.

city of just over 700,000 bhp successfully developed, tested per annum, but present labour and now received seven orders.

THE SLOW-SPEED marine? Harland is now licensed to build books. In the UK industry, and 450,000 bhp—the latter cylinder direct-drive two-stroke diesel engine industry in Germany's MAN medium-speed although the prospect of nine achieved in 1976, the best year. engine capable of 5,500 bhp and British Ships months security of workload is builded as similar designs from hardly a marter for some of the control of lenzer in the traditional terri-tory of the medium-speed-geared engine. It has attractively low fuel consumption and claims the ability to burn without ill-effect fuel of lower quality than is possible for medium-speed designs. It has of course its slow-speed com-petitors from the main Euro-

pressure turbocharging has also improved the efficiency of Doxrecession to regroup and ford's standard opposed pistonrationalise engine building four-cylinder engines, and with
activities to produce larger, a range of 5,000 bkp, to 27,000
stronger, and more competitive bhp the company believes it is
units for the future.

To this end it seems certain certain to be a market for prethat there will be seems certain certain to be a market for pre-To this end it seems certain dominantly smaller samps in the that there will be an amalgama-dominantly smaller samps in the tion of Scotts and Kincaid on the next few years. Certainly notified and of Hawthorn Leslie one is now regretting the Clarke. Much more failure to get into the superlarge-bore engine range for bigger, faster ships. Funds are expected to be made available under the terms of the BS cor-

slow-speed designs in existence now at the humilitatingly low at the humilitatingly low level of around 1 per cent. Dorstord, which after a number of very lean years has successfully developed, tested and now received seven orders.



PROFILE-PERKINS

The world's major manufacturer

PERKINS IS the world's major into the construction equipment engines at the top end of the Perkins is constantly negotiating superhuman schemes like should be simplified for the deplant has produced over 64,000 diesel, engine manufacturer business, and then was caught horse power range. Perkins has about possible local manufacture power stations and airports. In veloping countries." Last year about 560,000 Perkins by a downnum in nearly all its engines were made and the group has the capacity to make

The range of Perkins diesel engines rins from 30 hp to 255 hp and 45 products are specified as original equipment by more than 600 of the world's leading manufacturers of vehicles, agricultural machinery, construction machinery, indus-trial equipment and marrie

throughout 162 countries.

The group's 4.2032 industrial engine is the most widely used diesel fork lift truck engine in the world. In all Perkins claims that its engines are used in more than 30 per cent of the world's material handling equipment in 35 per cent of diesel combines; 31 per cent of engines and components in wheeled tractors; 10 per cent of commercial vehicles; 10 per cent of commercial vehicles; 10 per cent of generating sets and 8 about 200,000 engines compared per cent of pleasure craft. If with 220,000 in 1976-77 and a Japan is excluded, it also has peak of 269,000 in 1975-76.

Japan is exceeded, it also has
14 per cent of the comoressor
engine market.

Around 40 per cent of
Perkins' output goes to its
parent company. Massay
Ferguson of Ganada for use in
agricultural and construction
equipment. Of the 300,000 of
so engines. Perkins sold to so engines Perkins, sold to organisations outside M-P last year, 10 per cent went to Asia. 8 per cent to the Middle East and Africa and 36 per cent to Tatin America

Licence

All Mary

B-.13.

24. 70.35

Licence while sales to M-F should go up by about 3 per cent.

Perkins has four wholly owned plants. The biggest is at success has been the flexibility Peterborough in the UK, and the others are in Brank, where current output is around 50,000 to grample, the 6,354 unit is used angines a year, the H.S. (Canton to the contract of the contract output is around 50,000 to grample, the 6,354 unit is used angines a year, the H.S. (Canton to the contract of the contract output is account to the contract of the contract output is account to the contract of the contract output is account to the contract of the contract output is account to the contract of the contract output is account to the contract output in the contract of the cont the others are in Brazil, where engine type. To take but one current output is around 50,000 example, the 6.354 unit is used engines a year; the U.S. (Canton in trucks, buses, pleasure and Ohio), where production is work boats, earthmovers, geneabout 20,000, and West Germany rator sets, compressors, and also where capacity is 26,000 a year. a range of agricultural equip-However, Perkins engines are made in 19 countries all told. In 18 of them Perkins has less than a 50 per cent shareholding in the manufacturing concern or they are being produced under nœice.

inder Reside.

Ferkins was founded by the late Mr. Frenk Perkins in 1932 in Peterborough. During the Second World War the company expanded dramatically. In 1959 it was acquired by Massey-

operations (Perkins contributes about 14 per cent of M-F's total annual sales of around \$30n compared with the agricultural equipment operations 73 per

ent). The parent group has been sationalising its construction equipment business but Perkins is certainly not included in any disposal plans.

trial equipment and marine Last financial year, which craft

There are about 35m Perkins sales jumped by about 20 per engines in operation in more cent in value to more than than 2,000 different applications 5740m. And according to Mr. throughout 162 countries.

Michael Hoffman, the chairman and managing director, Perkins remained profitable

But the main plant at Peter-borough has felt the effects of the same weaknesses in demand which has caused M-F problems.
Peterborough is the only Perkins' plant offering a full range The Peterborough workforce, which once totalled 12,000, has

by natural wastage, and is now down to 9,600. In spite of M-P's problems. Mr. Hoffman says that Perkins expects to maintain investment at Peterborough in real terms. This would involve lifting the \$19m spent in 1978 to around

\$23.75m. Mr. Hoffman says the group is expecting worldwide an 8 per cent increase in unit sales to third parties next financial year

This flexibility is the reason that Perkins has been able to penetrate that almost impene-trable market Japan. Some 99 per cent of the diesel engines bought by Japanese users come from Japanese manufacturers. But Perkins has the odd one per cent of the market, thanks to the marine application of its

ranges are complementary.

Perkins belief is that it should make sure it builds up a reasonable presence in Japan because sooner or later the Japanese diesel engine exporters will be making a very large impact on the third world, third market countries in which Perkins cur-rently predominates.

The Yanmar relationship is a company in the same industry but with a different range of countries.

light-weight, high-speed 30 hp to which most of them now insist 350 hp engines so the two upon At the end of last year, for example, discussions were in train in Colombia, Egypt, In-donesia, the Philippines and Taiwan as potential new manufacturing territories—in partnership with local governments or interests - and talks about a possible new joint venture in Pakis-

tan where it already had a licensec, were also going on. Mr. Roger Clark, director of good example of the principle sales and marketing, says that that a European exporter's best the multi-nurpose diesel engine agent in Japan may often be a has an important part to play in the future of the developing

producing simple diesel power can give people light when it is dark, pipe fresh water to them, help with the transportation of goods, improve fishing and the turning of soil," he adds. He recalls that the mechanis-

ation of 2,300 fishing boatsby the addition of small diesel units - turned Sri Lanka from a net importer of fish to a net exporter, while employment in the Industry increased. But the developing countries need simple diesels. "There is

need simple diesels. "There is a limit to the technology you can remove from a diesel en-

Apart from the developing represented in the Eastern bloc taken to a 100,000-a-year capacountries. A new engine manu-city, the same as Brazil. facturing facility at the Ursus tractor plant near Warsaw in Poland which has been completely refurbished by M-F and Perkins recently came on

And, of course, contacts have begun with the new outward- up and suggests there could well looking Chinese Governmentsignificantly at the invitation of the Chinese themselves.

There is a great deal of excess capacity in diesel engine in-

the U.S. facility, without much countries. Perkins is also well- additional investment, could be

> But the group does not believe its forays into the developing countries or the Eastern blocwill contribute to over-capacity problems because by 1981 or thereabouts it expects current surupluses to have been mopped be a shortage.

"In any case, most of the countries we are looking at are diesel engines. Either way there those where a big growth in would be no profit in it for demand for diesel engines can roducts, "There is a need for human, gine. But to the maximum dustry, as there is within be expected," comments Mr. In the developing countries, sized projects rather than extent possible the engine Perkins itself. The Brazilian Clark.

One part of the diesel engine market that Perkins will continue to ignore, even though it offers in the medium-term the greatest growth in demand, is that for car diesels.

As far as Perkins is concerned the market will either be too small to justify the research and development investment to produce a diesel tailored specifically for cars, or demand becomes so huge that the car assembly groups will design and build their own Perkins.

Fierce competition in generators

West Germany and Japan as one of the world's leaders in the design and manufacture of workforce, diesel generator sets. It is These countries were good wide experience in world a comprehensive national grid markets. Yet it is this very and (b) they were comparaposture which is causing it some difficulties at present

The world market is reckoned to be worth between £150m and £200m annually, of which UK manufacturers might take between 15 and 20 per cent. Yet their strengths have been in certain countries which for a variety of reasons have cut back generator orders to a small proportion of their former levels.

The three major countries in this category are Iran, Iraq and Nigeria. In the case of Iran, ordering was falling away even before the current wave of troubles, and tariffs had shot up. Iraq has imposed a general boycott of UK goods. Nigeria, which at its peak took an estimated 25 per cent of UK production, has raised its import charges from 5 to 50 per cent and raised the minimum deposit of letters of credit from 30 to 100 per cent.

expanded dramatically. In 1959 digsels.

All the UK manufacturers—
it was acquired by Massey—Perkins in Japan is linked and others around the world—
Ferguson—With another, local, diesel shgine have felt the pinch, and in generator set industries of their manufacturer Yahmar. Yahmar direct proportion to the extent own. But it is by no means a affected Tarkins. The parent is strong in the 5 hp to 30 sp. their production was export—
so as to expand, particularly machinery as well as in heavy which reckons that as much as leader in diesel engine produc-

is for the export market, has engines sell well in Germany, fierce is that diesel engine nificant rise in orders from the had to lay off some 100 of its France and Italy.

Here is that diesel engine nificant rise in orders from the manufacturers, especially those home market. Generator set

and (b) they were compara-tively well developed (and developing fast, at least in certain sectors) and thus required generator sets for plants or villages. However, in adverse times, as a number of the manufacturers ruefully admit, it is capital equipment which is hit first. "We have suffered early from the contraction in certain markets," said a Petbow executive, "other manufacturers have still to feel the full effects." More optimistically, the same manager saw an early upturn again for his industry, and says that the UK industry has not suffered any more than any other, and is

thus relatively as strong as ever. There are of course other markets, both in the Middle East and in Africa, as well as in Latin China inevitably crops up in the projections for future markets. Europe itself is naturally a more difficult sales area, since most

Perkins reckons it supplied in the U.S., have considerable manufacturers—as they observe more than a third of the engines surplus capacity. This in turn of themselves—are made happy more than a third of the engines surplus capacity. This in turn actively export-oriented, and has markets because (a) they lacked to the nearly 13,000 diesel sets is because they have anticipated manufactured in the UK last an earlier conversion by the case, it is the distressing pros-financial year. It ascribes its automotive industry to diesel pect of power failure which success with export-oriented power. Though this move is now stimulates sales—and it seems companies as being due to the strengthening, it still leaves too network of agents and distribu- much production chasing too tors it maintains in almost every country in the world, and manufacturers, like the U.S. to its newly adopted "care-card" companies Cummins and scheme. This operates by Caterpillar, are pushing bard in to its newly adopted "care-card" scheme. This operates by having a card attached to the engine which is detached by the end-user and sent to the local Perkins agent, who is then responsible for servicing. Mr. Brian Gomm, Perkins'

UK sales manager, reckons that servicing is extremely important in the market. "The engines themselves are fairly simple. There are two crucial components—servicing and price. It is a very highly competitive industry on price, and it is internationally competitive.
After price, we can only compete on servicing, and to be efficient at that you have to have world-wide coverage. The engine is 40 per cent of the worth of the generator set, and it's the most important part. If service to the customers of the set manufacturers, then you'll keep your market and expand

One of the major reasons why

few customers. Hence the major the diesel generator market. This has a two-fold effect on UK set manufacturers — where their competitors manufacture sets, they find the competition all the fiercer. However, where they sell engines, they find that these components are available at prices lower than they would

"We are in a very cyclical industry," says Mr. Peter Varley, Petbow's marketing director, "we are easily influenced by political events world wide. The industry has had a considerable setback over the past year, but it has taken measures to cope with the adversity and I think we're set for a rise again soon. The demand for generator sets in the you can offer good after-sales developing world is very strong and the long-term trend is up. There have been political and economic problems only on the short term.

Part of the optimism about Siddeley, together with the

THE UK ranks with the U.S., 80 per cent of its production tion says that the sets using its competition is reckoned to be so the future stems from a sig- independent companies of Petby others' distress. In their that a number of companies and institutions, and even a few private individuals, have decided that this year there may be a power crisis, or at sidiaries. least widespread power cuts. This sober reckoning has not resulted in a sharp uplift in home sales; rather has there been a steady increase in the domestic market, one which shows no sign of falling for the moment.

> The buyers include factories, offices, local authorities and of course computer companies, where instant stand-by power is essential. So important has this part of the market become that in the view of some in the industry, it may wholly compensate for the loss of trade in the export market if there is a winter of discontent "-- as the industry refers to it - in the months ahead. The UK market is currently reckoned to be worth around £20m, and may grow substantially.

The major UK manufacturers include the General Electric strike. Company (GEC) and Hawker

M and Welding Industries. The first two are of course groups: GEC's diesel companies are Dorman, Kelvin, Paxman and Ruston in the UK, with Baudouin in France and Also in the U.S., of which the latter has a considerable presence in generator sets. Hawker has the Lister, Petters, Gardner and Mirlees Blackstone diesel sub-

Daie, Petbow, and Dawson-Keith, by contrast, are specialist set manufacturers, using engines from a variety of suppliers, including Perkins, Rolls-Royce and Cummins in the U.S. All make both standby and base-load sets, with some production too of small transportable sets. The major independents each employ between 700 and 1.000 workers. and are strongest in the small to medium sets, from around

Forecasting future trends is dangerous, say industry executives. The more optimistic quote the view of stockbrokers Laurence Prust, who believe that the present weakness in the world market is the last of a long series of hiccups. Others say that better times will wait on an upturn in Third World buying power, or a prolonged power engineers' or coal miners'

John Lloyd

Behind many a good diesel you'll find Newage know-how...

... Newage Stamford Range A.C. generators in generating sets.

Newage heavy duty gearboxes and axles in dumpers and site vehicles. PRM marine gearboxes in yachts and pleasure craft. And Newage propellers on trawlers and workboats.

All three manufacturing Divisions of Newage Engineers have a common denominator; their products are designed to convert diesel power into doing power. Efficiently. Reliably.

Newage Electrical Division

As Western Europe's largest manufacturer of A.C. generators up to 1,250 kVA, Newage's Electrical Division makes machines for use worldwide to provide prime and stand-by power. Of the total production at our Stamford factory, no less than 90 per cent is exported, and our generators are in service in some 70 countries-in varying conditions from the Arctic to deserts of Saudi Arabia and The Gulf. The reputation of the Newage Stamford Range is such that output from the Division's 121/2 acre site has more than quadrupled in the past decade.

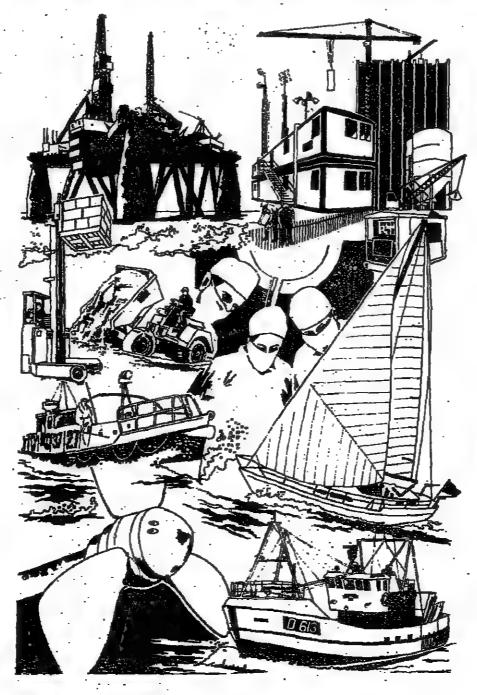
Transmissions Division

Based at Coventry, the Newage Transmissions Division ranks as a leading supplier of heavy duty gearboxes to UK off-road vehicle manufacturers. Some 95 per cent of British-built dumpers have a Newage gearbox—and in a growing number of site vehicles you find Newage axles made at the Division's factory at livine, Ayrshire. There's Newage reliability afloat as well, in the shape of the Division's PRM range of gearboxes increasingly used in yachts, motorboats, inland waterway pleasure craft and small workboats.

Marine Propulsion Division

At Shaw, Lancashire, Newage's Marine Propulsion Division specialises in the production of multi-pitch and solid propellers. For trawlers and workboats, with engines from 200 bhp to 1250 bhp, the Division's H2P Range of two-pitch propeller systems has

They can save upwards of 30 per cent on fuel consumption, give increased pulling power-and help protect engines and gears from overload damage. Good news for manufacturers of good diesels!



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West Germany's team

THE WEST GERMAN diesel of Kloeckner Humboldt Deutz Ruggerini in Italy. Hatz has struction equipment, farm diesel engine market. It is one engine industry is strongly (KHD), the subject of a made a particular speciality of machinery and generating sets. Of the leading European represented in all horse power separate profile on this page. "denoised" diesel engines, with separate profile on this page. "denoised" diesel engines, with a new generation of air-cooled a new generation of air-cooled world diesel engine industry is speed engines for marine and engine industry is strongly represented in all horse power categories, from the smallest to the largest. The engine manufacturers have the advantage of a large home market: German original equipment manufacturers are for the most part diesel engines, a major producer loyal to their domestic suppliers of tractors and farm equipment and it is not easy for British, and-its fastest-growing business French or Italian manufacturers —an international plant con-in gain a significant share of tractor, particularly in the field the market, although several of of non-ferrous metals and them are trying hard to do so, cement. What had been its Both the engine makers and fourth leg. Magirus-Deutz comtheir customers have been affected to some extent by the rise in the Deutsche Mark and this has probably helped to stimulate moves to establish per cent and Fiat the rest. overseas production facilities, narticularly in the U.S.

The company with the widest List range of engines is Deutz, part and

PROFILE—DEUTZ

ployees KHD had a worldwide turnover in 1977 of about DM 4bn. It is the world's lead-ing manufacturer of air-cooled mercial vehicles, is now part of Iveco, in which KHD holds 20

In the lower horse power ranges, below 30 hp, the two major producers are Hatz and Farymann, direct competitors to Lister and Petters in the UK

2. 3 and 4 cylinder engines in the range from 10 to 60 hp. Hatz, Farymann and Deutz small engines are widely used in construction equipment and a variety of other industrial applications.

In the high volume 30-500 hp category Deutz is again a strong contender, but the largest producer in Germany is Daimler-Benz. This company has a big internal requirement for diesel engines in its own commercial vehicles and cars; in 1977 Daimler-Benz produced 187,000 commercial vehicles and 166,000 diesel-powered passenger cars. With this strong base Daimler-Benz is an important supplier and of non-captive engines for con-

an outstanding success with the diesel-powered version of the. Golf passenger car. Volkswagen: is likely to produce well over 100,000 diesel cars this year and the Golf diesel power unit is being sold to outside customers for industrial and marine applications.

Competitor

facturer, BMW, is engaged in a Union) produces engines in the joint venture with Steyr range 400-7,000 hp and its Daimler-Puch of Austria to pro- annual output is about 2m hp.

A fast-growing force in the suppliers of low and medium-world diesel engine industry is speed engines for marine and Volkswagen, which has achieved power applications. The fourstroke engine group consists of five engines that provide ratings between 1200kW and 23,350kW and the two-stroke group offers four engines covering the range between 3,540 kW and 32,400kW. In adidtion, MAN produces the D25 family of high-speed diesels for use in its own and other

struction equipment, boats and generating sets. Another German car manu- MTU (Motoren-und Turbinen MAN is a strong competitor; are used in ships, 42 per cent in in two distinct segments of the heavy vehicles, 8 per cent in

companies' commercial vehicles:

it is also used in heavy con-

farm diesel engine market. It is one generating sets and 2 per cent in

heim), a subsidiary of Knorr-Bremse, produces two main groups of engine small engines from 5 to 125kW and top speeds in the range of 2.5093,090 rpm; and large engines of 100-5,590 kW and top speeds of 400-1,800 rpm. It has extensive manufacturing interests outmanufacturing interests outside Germany, including Spain,
Brazil and the U.S. Finally, one
of the heading Duro
pean producers of medium
speed engines for marine and
other applications in Mak
Maschinenbau, a subsidiary of
Fried Krupp GmbH. These
engines are used extensively in
offshore supply vessels and in
stationary applications for
power generation.

PROFILE-SAAB-SCANIA

U.S. expert joins Rugged Swedish German group

A BLEND of German manufac- main segments—related turing and design skills plus energy American marketing know-how engines -that appears to be the thinking behind the unusual appoint-ment last year of an American, Peter Schutz, who had worked for many years with Cummins run in the U.S., to run the Deutz other. engine business.

"A customer-oriented marketing concept" is how Schutz describes the contribution he hopes to bring to Deutz, one of Germany's largest producers of diesel engines. With his experience of selling in a highly With his competitive climate where the understand and satisfy customers' requirements is paramount. Schutz aims to strengthen Deutz's international sales and service network and to enlarge its share of world markets—not surprisingly the U.S. is at the top of his list

conversion (diesel engines and gas turbines); food production (tractors and farm machinery) and natural rerun independently of each

The diesel engine subsidiary has two distinct sides to itair-cooled engines ranging from three to 525 hp used in struction machinery, vans and trucks, tractors and a variety Magirus-Deutz trucks, but this now forms part of IVECO, the applications, and the larger water-cooled engines, ranging from 272 to nearly 10,000 hp and used mainly for ship propulsion and power generation.

Last year Deutz produced 137,000 engines in Germany and another 23,000 through licensees; less than 2 per cent of total production consists of water-cooled engines. About 20-

to tors. Fahr combines and farm machinery.

While this business provides a useful base load, Schutz emphasises that it is done on "an sources (project engineering arm's length" basis. He regards and management)-which are Deutz as an independent diesel engine producer, similar to America's Detroit Diesel, which is a subsidiary of Motors and supplies GM heavy trucks but operates as an autonomous company.

> KHD has a 20 per cent interest, with the balance held by Fiat; Schutz deals with IVECO "just like any other customer.

On the technical side, Peter Schutz envisages for the next few years a steady improvement in engine performance. He points to the replacement of the 411 engine with the 311, with The parent company, 25 per cent of the German array an increase in power per cylin-klockner - Humbold; - Deutz, cooled engine production is der from 14 to 17! hp; similar divides its business into three used "captively" in Deutz trac-gains have been made in the 913 (power per cylinder raised from 20 to 26 hp) and the 413F (from 28) to 32 hp). The same process is taking place on the

> Schutz is looking for steady improvements in turbo-charging. combustion and the reduction of noise, as well as design modifications to make the engine

vater-cooled engines.

But it is in marketing that Schutz sees the biggest scope for changes. Adopting what he calls " a very customer-oriented marketing strategy." he wants his deaters to be able to supply their OEM customers within a matter of two or three days at must. These customers are trying to cope with shorter lead times (they want to respond more quickly to their customers' needs) and at the same time they want to keep their engine stocks as low as pos-sible. Dealers are supplied with "stub" or basic engines which can be fitted rapidly into the

Advantage

"Our air-cooled engine gives us an advantage," says Schutz "It's a complete package—the nearest that an internal combustion engine can get to an electric motor.

Like most other European and Japanese manufacturers, Deutz sees the biggest growth potential in the U.S.

Deutz engines have been sold in America for more than 20 years—there are over 120,000 Deutz engines in operation there
—but it is only in the last few
years, with the growing recognition in America of the superior fuel economy of the diesel engine, that the business has begun to move sharply ahead.

Five years ago, Deutz .was selling less than 2,000 engines a year in the U.S. In 1978 the figure was about 16,000 and this year Schutz expects 20,000 units. The main outlets are small construction machines, backair compressors and similar equipment; irrigation

too, has been a particularly important market for Deutz. The company likes to claim that it makes the only "heavy duty" engine below 150 hp; where durability and long life is required Deutz believes it often has the edge on the competition But the growth in business has come mainly from markets which previously used petrol engines, not from displacing competitive diesel engines

At this stage, Schulz is plan-ning to tackle the American automotive market in a limited way. Domestic manufacturers such as Cummins, Detroit Diesel and Caterpillar dominate the supply of engines to the heavy truck market, but there should be scope for the smaller Dentz truck market, where the market, where engines in the van and light operator is looking for a 15-20year life for his vehicle.
"We have decided to huld

engines in the U.S.," says Peter CONTINUED ON NEXT PAGE

challenge

quarters of Saab-Scania at dustrial and marine engine Sodertalje in Sweden is a rough manufacture, Last year, 5,800 and hilly stretch of woodland.

Intrigued visitors who have been promised a look at a lorry been promised a look at a lorry look of engine—were sold, 80 per test area, find difficulty spotting cent going for export, any suitable-looking track. They

the heart of the woodland—and impossible for a man to climb

unaided. power. Finally, hearts really abroad do ascend to mouths, as the 111's driver insists on going down the 60 per cent hill—a test of the multiple braking systems as well as the narves of the total 18,500 Scania work-

the company's commitment to land, Iraq and Tanzania. manufacture. truck Three basic engine sizes form the backbone of Scania's diesel range: the eight, 11 and 14-litre units. Most of those sold are now turbo-charged.

Scania, the largest part of the Saab-Scania group which also in-cludes car and aircraft production plus medical and military

A MILE or so from the head- keen to stress at present, is in-

So the proportion of "non capany suitable-looking track. They are shepherded to a long bench seat at the back of a hefty SBA engine output is a quarter, in line with general industry exincresses as seat belts are perience. Engine-makers world-wide reckon this proportion is altering quickly in non-captive the heart of the woodland—and the local state of the woodland—and the woodland in the local state of the woodland and the woodland and the local state of the woodland and the local stat attacks a series of ferocious, five years is mentioned by some boulder strewn slopes, the coughest of which has a 60 per expectation, while bemoaning cent incline that would be the lack of thoroughly reliable statistics, a common complaint.

To return to the staple truck The 111, with all-wheel drive, operations, Scaola puts the total differential locks, and a twisting number of its truck chassis body frame, completes the steep variations at about 150. About climb, if not with ease, then at 85 per cent of Scania vehicles least with a striking show of are delivered to customers

unwary.

It is a convincing demonforce are in the home country. stration of what can be schieved and there are manufacturing division. 'taking so much of by the most rugged of Scania's plants in Brazil and Argentina diesel output, has been a notable truck range, and it underscores and assembly actilities in Holsuccess area for the company.

Scania arrived in Brazil as early as 1953, and the company's position there has grown to one of dominance. Brazil is its largest single market, the company producing over 4.000 trucks and buses annually, and the share of the local heavy track market has risen above 40 per cent.

The Dutch operation, based at equipment, sold 20,700 commercial vehicles last year. That total was made up of 18,800 trucks and 1,900 buses.

An increasingly important side of the company's activities, and one that Scania officials are

draught from powerful-An can competitors in Europe a whole is on the question price. Scania naturally argue that reliability and fuel econd give it an edge over an engines whole working life. Strict com-ponent standardisation has been introduced to aid the former on the latter, Scania officia claim that their engines overall consumption advantage rises as high as 20 per cent against sales competitors at the lowest polist of the fuel consumption curries with one variety of the III like

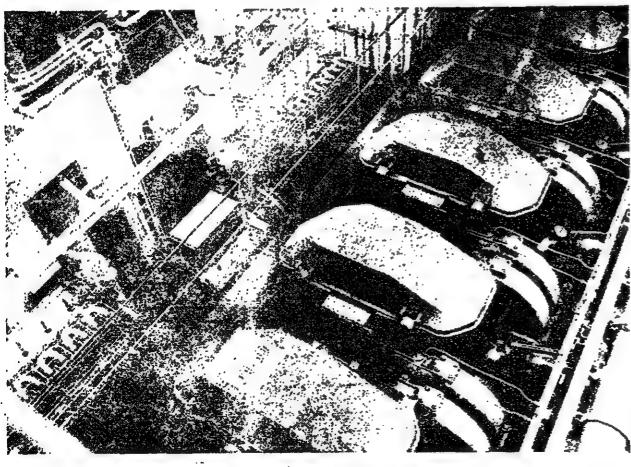
Those who do puzzle through the statistical information avail-able are bullish about the diesel engine's prospects. However, Seab-Scania has yet to carry it 40 years' experience of diesel. engine manufacture into a rang for passenger cars—this despite the major successes scored by diesel cars from rival manufacturers around the world. Saef Scania neither produces a dieselengined car nor makes power units for other manufacturer diesel cars.

But its important truck Overail, pre-tax carnings sales for the first half of improved 6 per cent (to the equivalent of \$35.9m. sne \$1.27bn, respectively), with profit margins widening satisfy-ingly. The truck division did a lot better than other parts at the group, registering a 19 per cent sales gain in the six months.

The target for the entire company for the 12 months was for a 10 per cent profit and sales rise, which should mean truck. turnover ahead a quarter over

- Nicholas Owen

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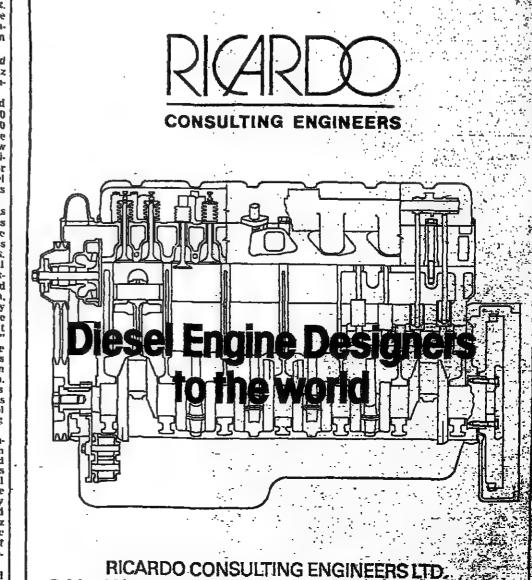
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Few bright spots in Japan

diesel engines in Japan have just beginning to push diesel suffered recently from low engines for passenger cars. The Japanese diesel industry shiphulding which is expected is dominated by a handful of to continue for some time. The companies most of which sonly bright spois have been in specialise and have carved out supplying construction equipment—where demand has been specialised markets for diesel boosted through massive doses of public works specialised markets for diesel of public works specialised markets for diesel of public works specialised markets.

THE MANUFACTURERS of the motor industry, which is diesel engines in Japan have just beginning to push diesel

PROFILE KIRLOSKAR

Spreading its net

lead from the traditional home tion which is far above that other industrial and marine achieved by the principal Euro applications; these engines are pean producers; only Lombar identical in design with the dini in Italy comes near to American built Cummins matching them. But will the engines.

Japanese be able to retain their lead? Is it possible that the mass production of small diesel engines a year, Kirloskar ranks are one of the world's largest engines will shift to developing countries, as is already happening in some other branches of

engineering? Of course both Yanmar and Kubota have the advantage of a large internal requirement for diesel engines in their own tractors and construction equip-ment Besides it would be wrong to regard even the small thesel engine as a low-technology pro-duct. But it is interesting that diesel engines represent one of the few branches of mechanical engineering where India has achieved a significant share of world production India s production of engines is probably running between 400,000 and 500,000 units a year, about the same as Italy and well shead of France, only Japan, the UK.

There is a huge domestic demand for diesel engines in India, especially for irrigation pumps and generator sets, but in other fields Indian manufacable to make use of this home able to make use of this nomebase to develop a substantial
export business. Here, however,
one of India's largest private
sector industrial groups.
Kirloskar, has in the last few Peter W. Schutz, aged 49,
years because a force to be
reckoned with in the world
diesel engine industry.
Kirloskar Brothers, the first
company to the group, was appointed a member of
the Board of Management
of Kloeckner HumboldtDeute in April, 1978, with
incorporated in 1920 and began
with the manufacture of and turbines. Born in

company in the group, was incorporated in 1926 and began with the manufacture of plaughts. As the industrialisation of India gathered pace, the Kirloskary branched out into the manufacture of diesel engines, electric motors, machine tools, pumps and valves tractors and a number of other products. Most of these involved the establishment and other electrical equipment, and Bharat Forge, which makes heavy-duty crankshafts for dugine manufacturers in India

and abroad.

Kinloskar Oli Engines, incor. president, porated in Poons in 1946, was much first Indian company to

THERE IS no doubt that in engines in water-cooled and airparts of the diesel engine indus—cooled versions. It currently try, especially in the lower produces 57 models in the horse power ranges apparese 3-140-hp range for industrial, manufacturers have stolen the agricultural and marine applications, and employs over 3,000. of the diesel engine, Western Another company in the group, Europe. The two leading Jap Kirloskar Cummins, was set up anese companies in the up to in 1980 to make heavy-duty 30hp category. Yanmar and engines in the 60-1,600 hp range Kubota, have an annual product for construction equipment and

> engines a year Kirloskar ranks as one of the world's largest manufacturers of small engines. Like other Indian engineering companies. Kirloskar has exported its engines in considerable numbers to other developing countries, both directly is the form of loose engines and indirectly as part of such equipment as pump-ing sets. But in recent years the company has taken steps to etrengthen its market position



and turbines. Born in Berlin, Schutz took a degree in mechanical engineering at Illinois Institute of Technology and began his career as an engineering trainee with Caterpillar.
After working as a project engineer in the development of Caterpillar's truck of separate specialist engineer in the developcompanies. Thus the group ment of Caterpillar's truck
now includes Mysore Kirloskar, one of the largest machine tool
producers in India, Kirloskar
Electric in Bangalore, which as director of technical
hakes electric motors, transplanning. In 1971 he was
formers, variable speed drives appointed vice president with worldwide responsibility for product planning and in the following year he became vice-

Export

CONTINUED FROM PREVIOUS PAGE

Schutz "When and where has shipbuilding. There have been still to be settled." He points out that this year's sales volume markets in power generation and other industrial applications. Deutz, whose range inmakes an economical basis for cludes the 628 range producing lical production.

"We won't be making engines in the U.S. because of the dollar."

BeutscheMark exchange rate or secure we can built them cheaper there, but because we can built them cheaper there, but because we can built them cheaper there, but because we can service our customers right and other industrial uses. Better," he says Apart from Having maintained production existing and potential American fairly constant in the last year customers, a good many European manufacturers who use Deutz engines in their equipment are now selling or intend. nent are now selling or intend different business from the mass production:

Manufacture in the U.S. is as ogical for Deutz as it was for Volkswagen, and perhaps even more necessary for marketing seasons. Like Volkswagen, Deutz has developed the market progressively over a number of kears and the product is now well accepted. For reasons of speed, the company may acquire an existing American factory rather than build on a green-field site.

With the larger water cooled engines, Schutz aces a different set of problems. Here all the leading manufacturers have been hard-kit by the slump in

engines, which are almost all sold to OEM customers for incorporation in their own equipment Although there is some transfer of basic knowbetween the two

distinct profit centres.

Covering such a wide horsepower range from 3 to nearly
10,000 hp, Dentz is in an excellent position to profit from the
expected growth in worldwide
usage of diesel engines. But the
higgest opportunity and the biggest opportunity and the biggest test of Schutz's marketing strategy—will be in the U.S.

Osaka is the largest maker of culture, partly because the machines with diesels will be diesel engines in terms of makers of such machinery over-down by 10 per cent, while numbers, but concentrates on the smaller engines for use in culture and for marine use.

Kubota of Kyoto holds the dominant share in the now depressed agricultural machinery market (70 per cent of the Japanese land-use diesel engines are for agriculture, with about 15 per cent used in construction and 15 per cent going to On the marine engine side, the largest of engines are made by the huge shipbuilders like Mitsubishi Heavy Industries, Kawa-saki and. Ishikawajima-Harima Heavy Industries. Leading the industry for medium size marine engines for use in cargo ships and fishing vessels is

Nilgata Engineering. Other major manufacturers of diesel engines included Daihatsu value. Kubota, which holds Diesel, which makes engines for about 40 per cent of the market generators, Fuji Diesel, a sub-all equipped with diesel contractor to Niigata and Toyo engines—showed a 15 per cent Sha, and Noda Sangyo and Iseki which build agricultural

machinery.

The land-use diesel engine makers have seen production this year drop sharply. Figures compiled for January to October show production of diesel engines nationwide fell by 18.7 per cent from the similar period last year to 501,258 units (petrol engines during the same period gained 4.9 per cent to 2.616,424 engines), while value fell 9.1 per cent to Y82.7bm (about

In the previous year, the number of engines built reached a peak of 715.544, up 7 per cent from 1976. The value in 1977 had been up 8.3 per cent to a high of Y112.92bn, according to the Internal Computation Manufacturars' Associabustion Manufacturers' Associa-

The biggest drag on the diesel

produced last year and found marine related sales remain flat.

The industry has also been hurt by Government initiatives this year and next to cut back on the production of rice in Japan. Farmers, who are subsidised by Government-supported rice prices, enthusiastically boosted Japan's rice crop this year to record levels, creating problems of warehousing the rice. Demand for tractors, combines and planters will be down as a result of less planting. Makers are hoping to boost exports to South East Asia and elsewhere. (Tractor sales to the U.S. are good, and China is being sounded out as a market.)

In 1979, it is expected that agricultural machinery sales will fall another 15 per cent in value. Kubota, which holds drop in agricultural sales in the latest half year account period ended in October.

Laurpment

a sales drop of 0.3 per cent to Y232.519bn while net profit fell about 1.5 per cent to Y9.29bn. The only sector in Kubota's diesel engine facilities doing relatively well was construction equipment, which inago but which remains a comparatively small segment of overall business.

Yanmar Diesel in its latest report for the year ended March 31, 1978, showed a net profit drop of 30 per cent to Y1.16bn, while sales gained 11 per cent to Y161.150bn. The company expects that this year

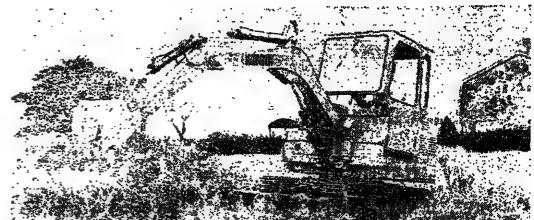
Construction equipment sales are up by 25 per cent.

Exports of land use engines (20 per cent of them diesel) were up about 23 per cent in the first seven months of 1978, but the industry is being told to avoid excessive increases in exports by the Minister of Inter-national Trade and Industry (MITI), which fears that a fast pick-up in engine exports to compensate for sluggishness at home could in the long run lead to further protectionist moves in other nations.

The Japanese market for imported diesel engines remains limited. Imports accounted for only 0.22 per cent of all the engines bought in Japan in 1977, down from 0.37 per cent in 1976 (in value terms the figures for imports are higher). The U.S. in 1977 exported 2,296 diesel engine products to Japan, valued at Y2.3bn, down from 4,685 units valued at Y2.42bn in 1976; the UK sold 2,065 diesel units in 1976 (Y1.074bn), down from 3,289 (Y1,442bn) in 1976; West Germany, which exports mostly large-scale engines, has done better, expanding sales in Japan to 1,507 units for Y1.5bn in 1977 from 1,263 units worth Y696m in 1976.

Production of marine use diesel engines peaked in 1977, orders now expected to downward as the worldwide depression in shipbuilding deepens. In Japan, demand for diesel engines for fishing vessels the 200 mile fishing limits now in force in many countries, which has prompted fishing fleet cutbacks.

In the first six months of 1978, there were 7.3bn horse



Kubota is one of Japan's largest producers of small diesel engines, which are used in and for out side sale. Sales of Kubota's small ride-on tractors aimed at parks, sports grounds and similar applications running at over 10,000 units a year in the U.S. and the market in Western Europe is also being developed. The picture above

shows the Kubota KHIOD, said to be the smallest 350-degree tracked excavator available in the UK. It is powered by an 18 horse power three-cylinder diesel engine. Other major manufacturers of small diesel engines include Yanmar, the biggest manufacturer, and lseki. Japan is by far the largest producer of this type of engine. .

Y131.9hn. Domestically, the shipbuilding industry is in the Japan lags behind West Gerprocess of cutting back 35 per cent of capacity, with the big-gest yards reducing by around 40 per cent. Niigata Engineering, in the

half year to September, 1978 saw sales drop 10 per cent to Y66.8bn, while net profit gained slight 1.7 per cent to Y1.028bn. Its production of marine diesel engines in the September half year totalled 340 units for 302.000 hp, well below the 1972 half year historical peak of 460 engines with 340.000 hp in total.

ago; tonnage was down 27.2 per ger cars are beginning to soar cent to 87,508 tons and the because of their fuel economy, value dropped 24.1 per cent to and improvements are being made in noise and vibration. many in the use of diesel engines in passenger cars but expects to catch up. In 1977, only 0.2 per cent of all Japanese cars were diesel compared with 3.7 per cent in West Germany, but two years earlier in Japan

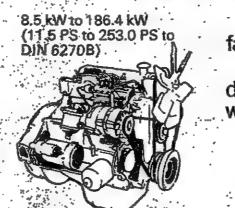
there were virtually none. Not counting imports, mostly from Volkswagen, diesel engine car sales in the first 11 months of 1978 totalled 38,896 units, up about 47 per cent from an already impressive 26.436 units in 1977. In 1975 there were only 1,100 units and in 1976 fewer

Nissan Motor is the largest maker of diesel cars, with three introduced in 1975. Toyota now has a diesel car and Isuzu, which makes large trucks with diesel engines, also entered the market in 1977.

The Japanese public is slowly awakening to the fact that in Japan the cost of operating a diesel car is about a third of that of a petrol-engine car. The major motor companies expect that they will reach the level of Mercedes-Benz — over 40 per cent-in the number of diesel cars produced compared with petrol-driven cars over the next few years.

Richard C. Hanson

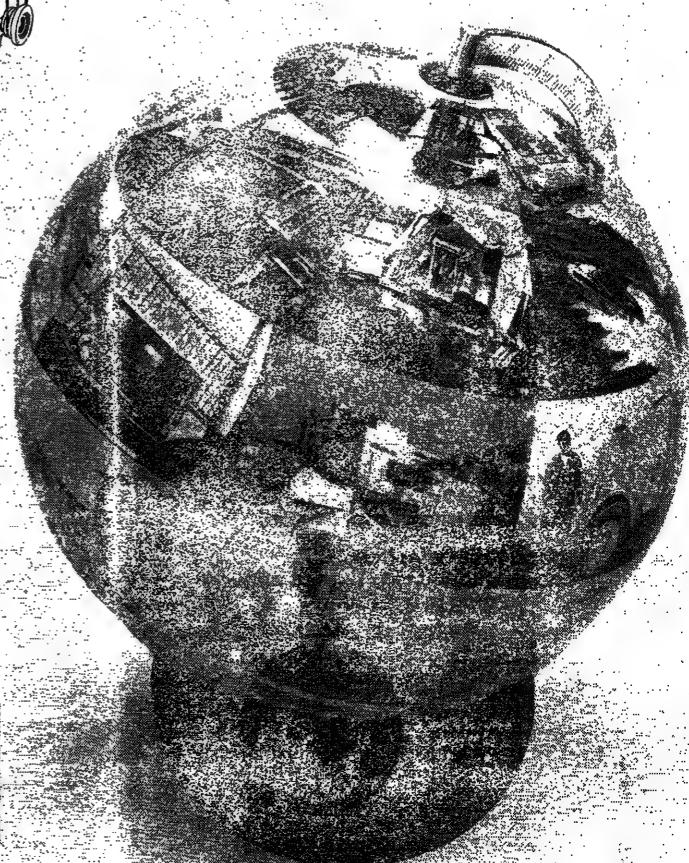
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PROFILE - CUMMINS

Plan to launch new series

a major new range of engines aimed initially at European manufacturers. It will be Militre in-line engine in the 230-320 hp range designed to serve what Cummins describes as "the large volume, heavy-duty European truck market." This is the lower end of a market already served by Cummins' NH series of 14-litre in-line engines used by such manufacturers as Leyland, Ford, ERF, Foden and Seddon-Atkinson in trucks of 32 tonnes gross vehicle weight (GVW) and above. Below this size, but still in the neavy-duty category, there is a requirement for smaller in-line engines of a size and specification which the NH series is not quite able to match. Most engines in this category

are at present made in-house by the European truck manufacturers themselves. One of the keys to the success of the new project will be Cummins' ability to convince the truck makers that it makes more sense to buy their engines from an outside independent supplier. The argument—which is at the heart of the company's position in the automotive mar-ket—is that the independent supplier, selling to a number of different end-users and specialising in the engine busi-ness, is better able than the truck manufacturers to meet new requirements and to invest in advanced technology.

Clearly Cummins could emhark on the new engine range with greater confidence if it secured an advance commitment from a substantial truck manufacturer to buy it. There has been speculation in the industry that Leyland Vehicles, the BL truck and bus sub-sidiary, might fulfil this role it already offers Cummins NH engines in its top-of-the-line Marathon truck—but Leyland is only one of several potential customers for the new engine-Leyland is a substantial engine manufacturer in its own right, both for use in its own vehicles

and for outside sale.
When and where the new engines will be manufactured has yet to be decided, but the expectation is that production will begin in the early 1980s. Meanwhile Cummins is pressing possible in the near future.

CUMMINS. THE largest independent diesel engine manufacturer, is nearing the point engine and developing new engine and developing new markets for them.

Cummins. is of course, an international company and the largest part of its business is still in the U.S. It supplies over 40 per cent of the diesel engines used in heavy-duty trucks; all the big truck makers, including General Motors, are among its customers. Cummins's biggest engine plant in Columbus, Indiana, is currently manu-facturing about 450 NH engines a day. Both with the NH and with its other engine families Cummins is an important supplier to non-automotive including construction, industrial and agricultural equipment, mining machinery, applications.

Cummins_has been manufacturing in Europe since 1956. The plant at Shotts, in Scotland was established to supply NH engines to Cummins' customers who were developing their European manufacturing operations. An important customer in the early years was the Euclid earth-moving equipment plant in Scotland; it is now Terex, owned by General Motors and mainly using engines made by Detroit Diesel the GM subsidiary.

But Shotts' most important cus-tomers now are the truck manufacturers; about 60 per cent of Shotts' business is automotive. engines to construction equipment manufacturers such as Coles Cranes, Atlas Copco, CompAir, Ingersoll-Rand and Clark. A big expansion is under way at Shotts, which will double its manufacturing capacity by

Exclusive

UK-based truck manufacturers have been important customers for Shotts, but Cummins made an important breakthrough in the Continental market when Ford chose the NH engine as the exclusive power unit for its new Transcontinen-tal truck assembled in Amsterdam. Cummins is in continuous discussions with a number of Continental manufacturers and some new OEM (original equip-

Above the NH, Cummins has the K family of engines which go up to 1.600 hp and are used mainly in heavy construction equipment and large generator sets. The family includes the KV12 and KV16 which are manufactured only at Daventry; last year this factory, which was acquired by Cummins in late 1972, produced about \$00 engines. More than half of Daventry's output is exported. Important OEM customers in the UK are the generator-set manufacturers, including Dale, Petbow, Industrial Engines and Dawson Keith.

Britain is also Cummins' sole worldwide source for the Small Vee engines, produced at Darlington at the rate of about 100 a day. These compact engines, covering the 150-240 hp range. have a wide variety of automotive and non-automotive applications. About 90 per cent of

Darlington's 'production is ex-An important customer in Britain is Ford, which uses the Small Vee engines as an option in its 16/24 and 28-tonne In the U.S. Ford has recently started offering the Darlington-built VT-225, a 225 hp engine, in its 8000-L series trucks, marking an important breakthrough for Cummins in the medium-duty section of the

US, truck market. With an annual production worldwide of some 150,000 engines and engine kits Cum-Apart from the truck makers, engines and engine kits Cum-Cummins also supplies NH mins has steadily built up its reputation as an independent producer of high-quality engines incorporating advanced technology. Although its Small Vee engines compete against engines made by Perkins, there is an important difference in the way the two companies approach the engine business. Whereas Cummins would not expect to produce any one family of engines at a rate of more than Darlington, England say, around 500 a day, Perkins Daventry, England looking for volumes of around 1,000 a day. One of the



Mr. Joseph Patrick, vice-president UK and Europe, Cummins Engine

associated with Cummins will move downwards into the sector

the new 10-litre in-line series discussed at the beginning of this article. That engine would

Plant

Shetts, Scotland

Celumbus, Indiana

Charleston, S. Carolina

big questions for the future is of Cummins' business, the how far the kind of technology desired production rate would probably be in the region of 300 a day, or 60-70,000 a year. move downwards into the sector 300 a day, or 60-70,000 a year, of a market normally supplied by Perkins-type engines and what the sponse to such a shift, if it takes place, Cummins should the cummins U.S. rival, Detroit takes place, Cummins should the cummins U.S. rival, Detroit Diesel Allison, is planning to make.

This is a separate issue from Shire, 4-stroke, V8 engine designed for trucks in the 7-12 designed for trucks in the 7-12

With this engine Detroit be very much in the mainstream Diesel is aiming to capitalise

tonne GVW range.

on the expected switch from petrol to diesel fuel in the Class 5 and Class 6 sectors of the U.S. market — a market which is attracting considerable is attracting considerable interest from European truck manufacturers. Cummins must naturally be considering how it could participate in this new market, but it seems unlikely that it could contemplate a major entry into this business without an assured high-volume customer; Detroit Diesel has of course, such a captive customer within General Motors.

Danger :

Cummins must also be con-scious of the danger of spread-ing itself too thin over too wide a horse-power range. In the past few years the top management has made a firm decision to con-centrate on the diesel engine business. A number of diversification ventures were sold of and the clear policy is to build on the company's reputation as a producer of high-quality engines, widening the market engines, widening the market both geographically and in terms of applications. A move "down market" to attack a new big-volume business would only make sense if the engines required by that market were in line with Cummins' estab-lished design and manufacturing philosophy.

G.O.

| | | The state of the s |
|---------------------|-------------------------------|--|
| CUMPIENS' | MAIN ENGINE | PLANTS |
| Model | HP range | Applications |
| NH V-903 V-12 | 230-450 240-500 525-800 | Trucks, industrial, marine Trucks, industrial, marine Generator sets, and mining |
| K6 NH | 450-600 230-450 | Trucks, industrial, marine Trucks, industrial, marine |
| NH | 230-450 | Trucks, industrial, marine |
| Small Vee | 150-240 | Trucks, buses, industrial, marine |
| KV12, KV16 | 230-450 | Trucks, industrial, marine |
| . NH | 800-1,600 | Generator sets, industrial, marine |

PROFILE - CATERPILLAR

Preparing for attack European market

CATERPILLAR IS the world's largest manufacturer of earthmoving machinery; according to some estimates it has about half the market outside the Soviet Bloc and China. Ils ability to expand its market share in North America is obviously limited by antitrust considera-tions, although its dominance of the industry has never been challenged by the antitrust authorities. More important, the growth in demand for construction equipment over the next few years is likely to be steady rather than dramatic. Partly for these reasons, Caterpillar has been devoting a large part of its capital investment in the past few years to the diesel engine business. It is already an established supplier of engines to the heavy truck makers in the U.S.: it has a strong position in marine and industrial markets, and in power generation. Cater-pillar is now determined to win similar market position in

Europe.
Caterpillar produced its first diesel-powered crawler tractor in 1931. Even in those early days it supplied engines to other original equipment manufac-turers and for irrigation purposes. During the 1950s new versions of Caterpillar engines were designed for marine applications and for generating sets; a separate engine division was created. In the past decade there has been a determined effort to upgrade the importance within the company of non-captive engine sales, with new manufacturing facilities, new engine designs and new market-

ing arrangements. Doubled

Illinois, which is the only source of Caterpillar engines for machines other than the company's own equipment, has been doubled in size. Recently a new site has been acquired at Lafayette, Indiana, which is helieved to be destined either for diesel engines or for diesel engine components. Caterpillar's total commitment to diesel engines between 1974 and 1978 is thought to have been nearly After some years of develop-

ing engines specifically for auto-motive applications Caterpillar chieved a breakthrough in 1969 when its 1100 series of basic families of diesel engine 8-cylinder diesels was chosen by in 221 different configurations. Ford to power all its mid-range Apart from the truck market the diesel trucks. This was followed by the 3100 series and later the 3200 series. Caterpillar now supplies engines to most of the leading U.S. heavy truck producers, including General notably fishing boats; the expanleading U.S. heavy truck pro-share of the marine market, as well as Europe) and this ducers, including General notably fishing boats; the expansional Harvester, slop of several countries fishing Caterpillar dealers to develop



The South Shields pilot boat powered by a Caterpillar Marine Engine

Mack and White. More than 25 per cent of Caterpillar's design and engineering budget is spent on engines. For the past decade Caterpillar's engine sales have been

growing appreciably faster than the rest of its business. In 1977

sales of diesel engines and related parts (excluding the engines used in Caterpillar's The Mossville engine plant in lilinois, which is the only source of Caterpillar engines for sales of \$5.8bn. The base volume provided by the company's inhouse requirements, together with its heavy investment in advanced machine tools and automated equipment, should make Caterpillar one of the low-cost disease organize assemblers in the cost diesel engine suppliers in its size range. There has been speculation that the company might one day decide to enter the truck market directly, but it seems more likely that Caterpillar, like Cummins, will see better growth prospects as an independent engine supplier.

Caterpillar now offers five basic families of diesel engine company is a major supplier of engines for use in drilling rigs and other petroleum-related applications. It has a substantial

Caterpillar has always been known for product quality and for service support through strong, well-financed dealers. The aim is to extend this reputation to diesel engine purchasers for whom reliability and service are the primary requirements but who may never have dealt with Caterpillar before.

In Europe Caterpillar has done well in the marine busi-ness, particularly in Holland and Norway, and it has supplied more engines for North Sea applications than any other manufacturer. But the company is now preparing itself for a more determined attack on other sectors of the European market, particularly the automotive business.

A new engine-marketing division has been created at the Geneva headquarters of Cater-pillar Overseas (which looks after Africa and the Middle East

fleets as a result of the extension of territorial fishing limits to 200 miles has brought a useful increase to Caterpillar's order hook. Unlike some other engine manufacturers caterpillar designs and builds its own generating sets which it sells under its own brand name.

In the earthmoving industry confidence in the caterpillar has niways been off-highway dump trucks. off-highway dump trucks.

Clearly the volume market for the kind of engines Cater-pillar makes is the truck industry, but here the company is up against established European competition-most of the European truck companies make their own diesel engines—and against an-American rival, Cum-muns, which has been manufac-turing engines in Furgue for mins, which has been manufac-turing engines in Europe for a good many years. Although Caterpillar does make engines in Europe (Glasgow is one such location), these are for use in the company's own European-built equipment and they could not be adapted to supply the European truck industry. Caterpillar may eventually

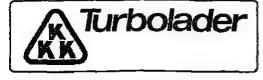
Caterpillar may eventually need to set up its own manufac-turing plant in Europe for noncaptive engines, but the first step is to find the customer who will provide the learnching plat-form into the volume market-the role played by Ford in the



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PROFILE-GEC DIESELS

Traditional emphasis on quality

small head office at Stanliope concerned with selling.

Gate in London and pushes as Does this mean that opportunities for rationalisation and down to the men who run the economies of scale are being duced by poperating groups. What is not reglected? Each of the four principle of decemiralisation is Newton-le-Willows, Dorman in followed no less rigorously stafford, Paxman in Colchester fication. This during Travid Pawell managing sheefalist engine builder; they principle of decentralisation is Newton-le-Willows, Dorman in followed no less rigorously Stafford, Paxman in Colchester within the groups themselves, and Kelvin in Glasgow is a great to the mass production business. At the top end Ruston makes around 200-250 engines and one in the U.S. Each of these companies is responsible for designing, selling and making its products. The only central department is marketing and this is very much a staff function—advising on the appointment of distributors and the UK.

standardisation between, say, Hughes, technical director at

This does not mean that the companies do not help each other on manufacturing and so that it could cope, if necessary, with the lower end of the the companies, though they are not compelled to buy inhouse. when there are two competing good deal of reorganisation was engines in the group Powell necessary in the early years, but

particular set of customers . Ruston range and the top end of the Dorman range. GEC Diesels has its own forge and foundry which can supply all

The chief engineers at the cannot afford to knock one of by 1972, when the group was EVERYONE KNOWS that Sir monitoring their performance.

Arnold Weinstock managing supplying market intelligence director of GEC, has a very to the companies, but very little small head office at Stanhope concerned with selling.

There is virtually no scope four UK companies meet every month to pool ideas and Powell has to be allowed to fade away. Profits, the decision was taken month to pool ideas and Powell has to expand internationally. The small head office at Stanhope concerned with selling.

> each engine's particular specidistinct engine types to ing companies need to be
> diminish over time—there are directly responsible for, and in diminish over time—there are directly responsible for, and in but they were under-reprenow about 24 within GEC close touch with, their overseas business. There are a good many be gradual. The nature of this overseas distributors who Europe and the U.S. design matters. For example, a industry is that once an engine handle some or all the engines crankcase machining facility at establishes a reputation for the GEC range, but an individual company in the group is controlled to the stablishes are put to whether they are fishing boat distributor if there are good

distributor of diesel engines, was

acquired in 1974; it handles

Lister products and has been re-named Lister Diesels Inc.

a sales and livensing agreement with Petters. Apart from its

considered from time to time four companies had a sizeable the three main engine types pro- Paxman, keeps an eye on new the establishment of a single export trade-at present about duced by Ruston; key comengine developments throughponents like the crankshaft out the group. There is a rejected it on the grounds that but the different to suit the dener of the management of the operatthave to be different to suit tendency for the number of the management of the operatindirect exports are included)-

> making small engines below the Dorman size range and some making very large engines above Baudouin in Marseilles, a wellof GEC engine sales in France. among the UK companies and more business on the Continent

and service organisation. In the has been won.
U.S., Witte Corporation of In the US,
Kansas, a manufacturer and panies were In the US, too, several com-

production of petrol and diesel engines. Onan is one of the leading U.S. manufacturers of generating sets, with a marketing network which should prove of great value to Hawker On the Continent, Lister last year established a new subsidiary in Germany. One of the main objectives is to sell engines to original equipment manufac-turers, especially in the pumping and construction equipment sectors. The aim is to convince German manufacturers that by using Lister engines, backed by its worldwide service network, they are more likely to secure

DORMAN BAUDOUIN *

On the Continent a number of take-over possibilities were examined, including companies Ruston: an important proviso was that any bid should be agreed. Finally, GEC settled on established supplier of engines for marine and other applications. The integration of Baudouin into GEC Diesels has been a gradual operation—the Dorman Q engine is now being manufactured in Marseilles-and the acquisition has not had a dramatic impact on the level But the presence of a French manufacturing company within the group has increased the awareness of the French market

panies were looked at before Alco, a subsidary of White Motor, was bought in January. 1977. This company is best named Lister Diesels Inc.

In 1975, Hawker Siddelcy engines, but it also supplies the acquired a 37 per cent interest marine and generator set markin Onan Corporation, which has kets. Producing about 150-200 engines a year, it is comparble in design and manufacturing phliosophy to Ruston. GEC has used the Alco

organisation to support the sale of Dorman engines in the U.S. The plan is that major design-development work for new engines aimed at Alco/Ruston markets will be undertaken in the UK, with joint production in both factories. Cracking the U.S. market is not easy, but Powell is convinced that without a local manufacturing com-pany the task would be almost impossible. The standards of service which customers in the U.S. expect, the methods of distribution and the training of dealers - these are matters which can only be learned by direct experience of the market. clearly a sector which, though Acquisition of Alco has crowded, offers scope for ex-

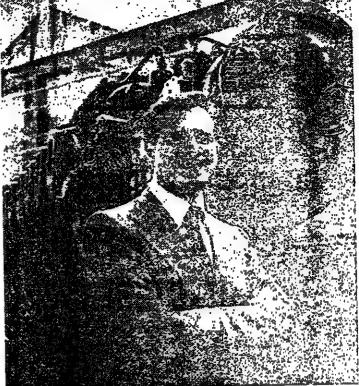
GEC DIESELS Horsepower Main applications тадея 400-5,000 Marine propulsion, power generation.

> Small boat propulsion. Power generation, marine pro-pulsion, industrial equipment. Marine, industrial.

Marine propulsion, power generation, rail traction.

Rail traction, marine, industrial. Abous 34 per cent of GEC Diesels' production goes to marine applications, 54 per cent for power generation and ladustrial

applications, 12 per cent for rail traction.



Mr. David Powell, Managing Director, GEC Diesels

enabled GEC Diesels to get its pansion. Bu; for the present American operation moving much faster than would have been possible on the basis of direct exports from Britain. Other acquisitions are pos-

sible, but it seems unlikely that GEC will wish to depart from its traditional emphasis on premium quality. Thus Dorman is moving cautiously into the automotive market—one of its engines is being offered as an option by ERF—and this is

GEC is content to build slowly on Dorman's established experience as a supplier of engines for off - highway vehicles. "We are not going into the truck market in a big bang fashion," says Powell. In the diesel engine business. where mutual trust between customer and supplier takes a long time to establish, new markets are not won in a hurry.

PROFILE-HAWKER SIDDELEY Group's move to expand share of the world market

AS PART of its diversification Both companies design and away from zerospace, Hawker manufacture equipment incor-siddeley built up a substantial porating their own diesel stake in diesel engine manu engines. In addition to facture: With the zerospace interests now removed by built up a sizeable business in nationalisation, the importance transport refrigeration units for of the diesel engine business for road, rail and sea applications. Hawker Siddeley has become The two companies supply

عال في الأعالة العالية الأعالة

Branch Mark

SERVICE TRANSPORT

The purchase of the Brush important customer for Lister Group in 1957 brought with it engines.

Petters, one of the country's At the other end of the largest producers of small engines below 50 horse power, and Mirrless, a leading pro-ducer of large medium-speed engines for marine; and industrial applications.

In 1965. Hawker Siddeley acquired R. A. Lister which included two diesel engine producers - Lister itself. making small engines but covering a wider horsepower range than Petters, and Blackstone, which made engines comparable to those of Mirrices.

with a very distinct image, is in direct competition with such companies as Cummins, Leyland and Rolls-Royce Motors.

range of diesel engines in its and generating sets have been portfolio. Like GEC, the parent affected by recent political and group gives each company a financial problems in Nigeria, high degree of autonomy; they first and fran, but this is are run as separate businesses and compete with each other in certain markets. Lister and Petters, for example, both make their own generating sets which are sold in competition.

Although Mirriess and Mirries Blackstone, are well-Blackstone were merged after Mirries Blackstone, are well-the 1965 acquisition of placed to take advantage of it, the 1965 acquisition of placed to take advantage of it. Overcapacity among pro-Lister, they have recently Overcapacity among pro-Lister, they have recently out as divers of large marine engines Although Mirriees and Lister, they have recently Overcapacity among pro-been separated out as ducers of large marine engines Mirriess Blackstone (Stockport) is likely to persist for several and Mirriess Blackstone years. There is some concern

In connective terms, both part of GEC Diesels, of poten. Hawker Siddely is most unLister and Fetters probably fial orders.

Lister among the top ten Yet Hawker's most intriguing in the way Gardner conducts its rank among the top ten Yet Hawker's most intriguing in the way Gardner conducts its producers in the way Gardner conducts its diesel engines. Their combined try was the acquisition of point in the merger unless output is well over 100,000 Gardner. This company had Gardner was encouraged to grow engines a year and more than been the object of apparently somewhat faster within Hawker half their production is unwelcome attentions from Siddeley than it would have exported.

even greater; the existing sub-engines to a wide range of sidiaries in this field are being. OEM customers, particularly expanded and further acquist in construction equipment: tions, especially outside the Thwaites, the manufacturer of UK are obviously a possibility, small dumpers, is one

At the other end of the horsepower range, the two Mirrless Blackstone companies have inevitably been affected by the shipbuilding recession. There is intense competition among manufacturers of medium-speed marine engines the largest share of the market is held by Pielstick and its licensees and they have all sought to expand their business in stationary applications, for power generation.

Mirriees has for some years achieved substantial sales for In 1977, the group made its the Middle East and other move into the highly competitive sutomotive market by buy second order was for 38-eight order developing countries. One tive sutomotive market by buy second order was for 38-eight order developing countries. One tive sutomotive which, though a part of a £22m electrification a small volume manufacturer with a very distinct image, is in part of a contract secured by another company within the group, Hawker Siddeley Power Engineering

regarded as a temporary biccough in what should remain a growth market. The world is short of electrical power and those diesel engine manufacturers who are estabilshed in this field, like Mirriees Blackstone, are well-

and kirries blackstone Blackstone years. There is some concern and kirries. Blackstone years. There is some concern some some concern and section and medium-speed engine producers each is responsible for that the future policies of designing making and selling British Shipbuilders could make the situation worse. The danser that the future policies of British Shipbuilders could make the situation worse. The danser Similarity. Gardner has is that British Shipbuilders may automated in the motor industres autonomy within seek to bring work to its own associated with the motor industres autonomy within seek to bring work to its own associated with the motor industries autonomy within seek to bring work to its own associated with the motor industries associated wither associated with the motor industries associated with the motor

HAWKER SIDDELEY'S U.K. DIESEL ENGINE COMPANIES

HP range: 1,500-11,000 Mirrlees Blackstone (Stockport) Mirrlees Blackstone

Сотралу:

(Stamford)

Industrial Marine, power generation, industrial Marine, power generation Marine, industrial, power generation Automotive, industrial,

Application:

Marine, power generation,

There may well be greater

stages of machining, without

facturers, Hawker Siddeley's ability to expand its share of the

rival, Rolls Royce Motors, and capacity is about 6,000 engines there was some surprise in the a year. industry when the directors decided to forego their investment in modern machine independence and join Hawker tools, particularly in the early Siddeley.

The announcement of the deal undermining the Gardner tradi-prompted an editorial in the tions of craftsmanship. Inter-trade magazine, Diesel nationally, too, Gardner should trade magazine, Diesel nationally, too, Engineering entitled "End of an era?" The editorial pointed an era? "The editorial pointed in the marine field. criticised occasionally for having conservative engine designs, has maintained a reputation for quality which is second to none. Their strength is based on two crucial factors. both of which greatly affect the operator's pocket, namely, a consistently low specific fuel consumption, coupled with

proven durability."
The current range of Gardner engines, making extensive use of aluminium alloy, is a recognisable descendant of the comnany's first automot engines produced in the 1980s Partly through the influence of the Gardner family the comhas consistently pany quality shead of volume. While this policy has involved an almost deliberate loss of market share, truck and bus operators who have remained faithful to Gardner are often willing to put up with long waiting periods rather than switch to an alter-native supplier, the re-sale value of Gardner engines is

extraordinarily high.

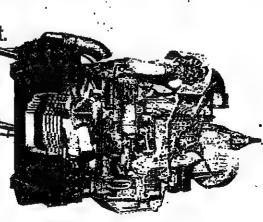
Within the Barton Hall engine works at Eccles, near Manchester, which includes a recently modernised aluminium foundry, the approach to engine manufacture is more akin to a craft than to the high-volume

world market depends in large part on the strength of its sales offedence noower

The power of a diesel engine really depends on the organisation behind it. Power means the know-how and the reputation of the manufacturer. Power means professional OEM installation by the supplier. Power also means first class service

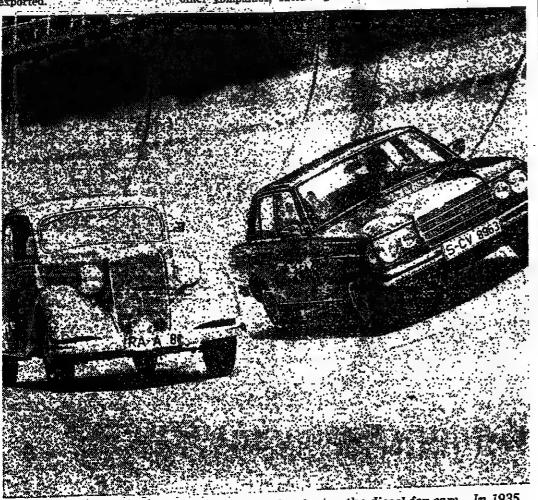
back-up and the availability of spare

But most important of all, power means reliability.



DAFDiese continuous oower

For further information: DAF DIESEL, P.O. BOX 1055, 5645 TK EINDHOVEN, HOLLAND. TEL: 040-149111.



Mecedes Benz has played a major part in developing the diesel for cars. In 1935 the 260D (left) was the first-ever standard production diesel saloon and (right) is the 300D, which is the first car to be fitted with a five-cylinder diesel engine components and products incorporating diesel engines. While demand engines in the U.S. seems certain to grow considerably faster in the next decade than it has in the past, rates of growth will vary from one sector of the

ines, engine id products seel engines. for diesel .S. seems cerderably faster le than it has of growth will sector of the r. The pros-

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MANUFACTURER

4. The negotiation of supply arrangements with an American original equipment manufacturer (OEM), who will instal in his equipment engines shipped from Japan or Europe. 5. The sale in the U.S. of liesel-powered equipment made in Europe or Japan.

Local manufacture

Perkins, the Massey-Ferguson subsidiary which is Europe's largest manufacturer of diesel engines, acquired a factory in Canton, Ohio, from White Motor, Production of diesel engines at this facility is run-ning at about 22,000 engine units a year and the intention is to increase the output to 100,000 engines a year by the the Canton-built engines

ture engines in the U.S. in the near future, though the location and timing have yet to be announced. Deutz expects to sell some 20,000 German-built engines in the U.S. this year builders in the UK, bought Alco but it needs a local manufac- from White Motor in 1977. More turing base in order to forge

Expanded

Among component manufacturers Robert Bosch of Germany, one of the two leading producers of fuel injection equipment, built its first American factory at Charleston, South Carolina in 1973. This plant will be expanded step-by-step in line with demands from the original equipment manufacturers. An important customer for Bosch will be Volkswagen, which will be manufacturing its diesel version of the Golf in the U.S. later this year. Other customers include John Deere, Mack and Detroit Diesel, the General Motors subsidiary.

Bosch's great rival in the fuel injection business. Lucas Industries of the UK, announced in 1977 that its CAV subsidiary would begin assembling fuel injection pumps at a new factory at Greenville, South Carolina. Lucas was already supplying some U.S. engine builders and Perkins is also an important customer for the

about the U.S. venture Lucas duces its own engines with an said the facilities in Greenville output range of 125-510 hp, will

would also be built to "ensure continuity of supply to American customers both for pumps produced on site and for other CAV diesel fuel injection components supplied from out-side the U.S. The new facility will also provide a base for marketing CAV products in North America. By establishing manufacturing operations on American soil, CAV expects to be become an even more accept-

able component supplier to U.S. diesel engine builders." A quicker route into the

market, especially for a com-pany whose products are not well known and which does not already have close connections with particular customers, is include Massey-Ferguson itself the acquisition of an established and a number of other OEMs. company. It provides a ready the acquisition of an established One of Perkins' main made marketing organisation and manufacturing facilities many, has decided to manufacturing to the manufacturing facilities which can be used to assemble or manufacture those foreigndesigned engines that seem most suited for the American market. General Electric Company.

one of the leading diesel engine builders in the UK. bought Alco than 11,000 Alco engines are in closer links with its American service and the company's present production rate is about 150-200 engines a year 150-200 engines a year: although best known for its rail engines. Alco also the marine. offsupplies highway, power generation and other industrial markets. Ownership of Alco gives GEC Diesels direct experience of marketing techniques customer requirements in the U.S. and provides vital support as the company seeks to develop sales of its British engines.

Hawker Siddeley, whose diesel engine interests include Petter, Lister Mirrlees Blackstone and Gardner, has two manufacturing interests in the U.S. In 1974 it bought Witte Corporation of Kansas, a manu-facturer and distributor of engines, which now handles the Lister range of products. In the following year Hawker Siddeley bought a 37 per cent interest in Onan Corporation which has a sales and license agreement with

Last year MWM of Mannheim, one of the leading European diesel engine producers, acquired Murphy Diesel of In making the announcement Milwaukee. Murphy, which pro-

engines, has set up its own subbased at company sidiary Doraville, Georgia, which will establish a sales and distribution network throughout the country. The company will stock engines and parts and "factory-trained personnel will be available for applications engineering and service train-ing support." Lombardini also has its own subsidiaries in Germany, France, Spain and

ing German producer of engines in the 400-7,000 hp category, has established its own sales sub-sidiary at Houston, Texas, "The diesel engines

pany, has set up its own com-pany in Baltimore, Maryland, and is developing a nation-wide sales and service organisation to support its range of 5-107 hp models. 4. Supply arrangements

through exports or through local manufacture, the key to success in the U.S. diesel market is the OEM business—negotiating supply arrangements with a volume producer of large Singapore.
MTU (Motoren-und Turbinen
Union Friedrichshafen), a leadThere is some anxiety in Europe
that Japan may seize a largethat Japan may seize a largeequipment. that Japan may seize a large a minority interest in White proportion of this business, Motor, one of the smaller U.S. especially in the automotive

Mitsubishi is supplying diesel American factory, engines for Chrysler's light ruck production and there have truck production and there have are to be sold through the manufacture of t

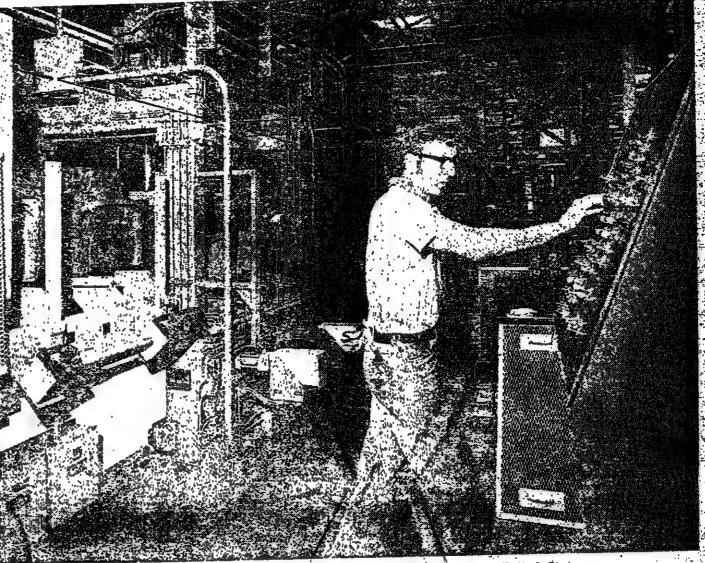
Daimier-Benz are exporting diesel-powered trucks to the Some other European truck makers believe that the scope for direct exports of fully built-up trucks is limited and that it will be necessary for the vehicles to be wholly or partially manufactured in the US. This is the thinking behind the purchase by MAN of Motor, one of the smaller U.S. heavy truck producers; this may lead to the manufacture of a German-designed truck, incor-

International porating some German-made engine).

the Mack brand name. A similar uneset engines from Japan. some Japanese equipment. Supply of original equipment suppliers. For example, Iseki, one of the largest Japanese producers of tractors have being followed by some Japanese equipment. Renault Industrial one of the largest Japanese producers of tractors have been producers of tractors have be approach is being followed by a long-term agreement with White whereby Japanese built small tractors will be sold through White's network of

farm machinery dealers. Whatever marketing channels are used, sales of imported equipment incorporating diesel engines are certain to grow. This will bring opportunities for the engine suppliers and make it more necessary for them to have their own plants in the

danae



Engine production at the Perkins' factory in Canton, Ohio, United States

Americans expect a compromise

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DIESEL IS rapidly attaining the U.S., largely because the fuel saving qualities of the diesel engine have given it an important role in the future plans of the Detroit motor industry. Although the Government's exhaust emission regulations seem to present a barrier to the widespread use of diesel engines in passenger cars of the 1980s. the car companies are going ahead on the assumption that a compromise will be reached.

diesel engines so that more than dicting that diesel trucks will

And not just the car com- 85 per cent of this category is take 15 per cent of the class six status of a "buzz word" in the panies. Major European com- now diesel-driven. But the ponent suppliers such as West diesel engine is new rapidly Germany's Robert Bosch and trickling down into the medium Britain's Lucas Industries are duty category of classes six and setting up assembly operations seven. In the first nine months in the U.S. in the hope of a of this year diesel took 63.4 per rapidly expanding market for cent of class seven shipments fuel injection equipment. But the growth will come from 1977, while in the larger class trucks as well as cars. The class six segment penetration is eight heavy duty market for climbing from last year's 8 per trucks of over 33,000 lb has cent to more than 11 per cent. increasingly been dependent on International Harvester is pre-

market by 1980, 23 per cent by 1982 and 35 per cent by 1985, or approximately 70,000 out of a total market of 200,000 units. Lured by this prospect of a steadily growing market a number of European companies, Iveco, Mercedes-Benz, Volvo, Renault and MAN are preparing major sales drives to market their products in the U.S. But the U.S. companies, some of which have been late in seeing the potential for diesel in class six, are now moving swiftly to catch up. Of greatest potential here is the new plant which General Motors' Detroit Diesel

the medium duty market. With the marketing power of GM behind it, this unit will be seen not only in GM trucks but also those of other manufacturers and it is possible that its availability could quicken the anticipated rate of diesel growth in the medium duty market. But gains already scored by the diesel indicate that it will match in 1978 the great strides of the past two years. Of the total 3.44m factory sales of trucks in the U.S. in 1977 some 185,297 or 5.4 per cent were equipped with diesel engines, which was 43 per cent more than in 1976 which, in turn, was up 26 per

Allison subsidiary is building to

produce up to 75,000 units a year of a new 8.2 litre diesel

engine designed specifically for

Virtually all of the sales were in the medium and heavy duty truck segments and most experts agree that the main impetus to equip light vans and trucks with diesel engines will flow from the effort to develop diesel engines for passenger cars. Although a number of European companies, notably Mercedes-Benz and Volkswagen, have been offering the diesel option for several years the

U.S. factory sales of trucks with diesel engines. 105,714 113.152 1971 143.089 1973 168,389 167,259 1974 102,508 1975 1976 129,076 185,297 1977

Source: Automotive News 1978 Market Data Book.

MARKET SHARE OF LEADING U.S. MANUFACTURERS OF DIESEL ENGINES FOR TRUCKS

| | | | 1976 | |
|------------------------|---------|--------|-----------|-------------------------|
| Cummius | 40.1% | 37.1% | 40.3% | 47.Zy |
| Detroit Diesel Allison | 34.9% | 24.7% | 19.4% | 22.69 |
| Wack | 15.6% | 22.4% | 17.3% | 16:39 |
| Caterpillar | 8.5% | 13.9% | 11.3% | Tria |
| Others | 0.9% | 1.9% | 2.7% | 2.89 |
| Source: Cum | mins En | gines. | 7 ** .* . | مين والدين ماين والد |

Elliot M. Estes, predicted only a few weeks ago that fully 25 to

30 per cent of his company's pas-

senger cars will be equipped

with diesel engines by then. Mr.

Estes argues that diesels are

essential if the large six-passen-

the rule setting a 10 gram oxide

for 1981. Quite simply neither

manufacturer will have to show

is by no means assured and the

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breakthrough into U.S. pro- industry may well have to lobby duced cars occurred last year Congress for relief. In the when GM offered a diesel with meantime, there are reliable some of its Oldsmobile models. reports that GM is pressing Having sold 33,826 diesel-powered Oldsmobiles in the ahead with plans to produce at: least two and possibly four new 1978 model year ending in September GM has scheduled production of 190,000 dieseldiesel engines within the next three years. Firm plans. apparently include a 5-htre V8engined units for the 1979 at Chevrolet in 1981 and a 3.8litre V6 at Buick for 1982 - At model year which will be installed not only in Oldsmobile the same time GM is said to be models but also in Cadillacs. The also considering designs for a company is anxious to establish 4.1-litre diesel V8 from Cadillac and a 1.8-litre four-cylinder a market for diesel-powered and a 18-litre four-cars as quickly as it can for diesel from Chevrolet.

their lower fuel consumption These would supplement the offers significant help in meet-Oldsmobile output which is ing the Government's fuel requirements which demand GM's only current source of light duty diesels-5.7-litre V8 that the fleet cars sold by each and a 4.3-litre V8. Both of these car manufacturer conforms with are adaptations of gasoline a steadily rising scale of fuel is said to be a brand new design which will be installed on the The 1979 average is 19 miles to the gallon rising to 27.5 mpg division's 1981 pick-up trucks. in 1985, and GM's president,

But these interesting and important developments in private cars should not be allowed to obscure the fact that in unit terms the so-called industrial market is still the larger. Here the diesel engine of 50 hp and upwards is the workhorse in industries as diverse as agriculture and mining. Hard data on the ger U.S. car is to survive, but atthe moment the extensive use of diesel power is threatened, by market are much more difficult of nitrogen emission standard one of the world's leading manu CM nor anybody else has been facturers of diesel plant, estiable to design an engine able to meet that standard and it looks mates that in 1976 the industrial market for diesel engines totalled around 389,000 units which divided as follows: certain that Detroit will be petitioning for a waiver allowing a standard of 1.5 grams of NOX for up to four years. The generator sets 19,000, agricul ture, 216,000 off highway vehicles 117,000, stationary that there is no health risk resulting from a relaxation of power 31,000 and marin is said to have stewn only modest growth with of highway the rule and the Environmental Protection Agency has issued and marine sales rising by about 5 per cent and agriculture guidelines on the health data required which the industry regards as extremely stiff. remaining static A relaxation of the standards

John Wyles

I'm best at." This is the argu- one engine company to another. ment which the diesel engine Some have their own foundries producer puts to, say, the and forges. Others buy-in virmanufacturer of trucks of con-hally all their castings and struction equipment; designing, forgings and even sub-contract developing and making diesel engines is a complicated and Bought-in components probably expensive business which the represent at least 50 per cent end-equipment manufacturer, of the value of most diesel unless he is operating on an engines; in some cases the pro-

exceptionally large volume, portion may go as high as 70 per should leave to the specialist, cent. Exactly the same argument is The choice of suppliers and put to the diesel engine mann, the monitoring of their per-facturer by the specialised come formance are crucial elements ponent suppliers: "Don't make in the engine manufacturer's in house what can be more eco-strategy. Like Marks and Spen-nomically purchased outside," cer in the textile and clothing Companies which make pistons, industries, the high-volume cylinder liners, coolers, fuel engine manufacturer works very injection equipment, turboclosely with his key suppliers.
chargers and a variety of other He will try to provide them with proprietary or semi-proprietary a forecast of likely offtake over items provide the essential infraa 3-5 year period and this will be discontinuously to be set.

engine manufacturers have a basis as possible for his own choice between making in-house investment decisions. At the and buying out; the balance of same time there will be a conadvantage is kept under regular tinuous dialogue between the review. But in most cases the engineering staffs of the two technology, concerned is sufficemental companies to ensure that quality ciently specialised, and the and technology are kept up to amount of investment so sub the mark stantial, that it makes sense for The engine manufactures to rely does not like to be too on an outside supplier who can dependent on a single supplier. spread the investment over a yet to spread his favours among much larger volume of sales. a number of producers of the

some of their machining work.

The choice of suppliers and structure on which the diesel be reviewed in detail at least engine industry depends, once a year; the aim is to give With some of these items the fine component maker as firm a

"YOU DO what you are best at ... The degree of vertical integra- same component would clearly has to balance the advantage of elsewhere. So, too, can the excess of the internal require and leave it to me to do what tion varies considerably from be uneconomic—not only being close to the customer, and Japanese component makers; ments of any one of its major because it leads to a fragmentation of volume but also because of the cost and engineering time involved in approving and checking each product. A comfortable position for the engine manufacturer is to split the business roughly 75 per cent/25 per cent between two major suppliers.

would be the preferred source for a particular engine range, the buyer has the option of altering the volumes in the event of a serious industrial relations problem at one or other company, or unexpected quality deficiencies. An important factor in the choice of supplier is his ability

to provide worldwide service back-up. The component makers have to follow the manufacturer as he moves into new overseas terriproviding service support and in some cases building manufacturing facilities of their own. This certainly applies in a country like Brazil, where Government restrictions virtually prohibit component imports; the component maker has to establish or acquire his own factories if he wishes to participate in the growth of the diesel industry

hence establish local assembly and manufacturing facilities, against the economies of scale provided by the home manufacsupplier's turing base. A number of UKcomponent producers have been able to supply the U.S. market by direct exports from the UK; some of them have a cost and quality advantage over domestic American suppliers. Perkins, now manufacturing engines at its plant in Canton, Ohio, has found it more economic to source many of its components with its established British suppliers than to switch to American companies; the British suppliers, of course, have the advantage of the much larger volume of components supplied to Perkins' Peter-

As U.S. demand for diesel engines grows, no doubt there will be a tendency for more component companies to set up their own factories in the U.S., as Bosch and Lucas-CAV, the two leading suppliers of fuel injection equipment, have already done. But the principle of worldwide component sourcing is well established in this industry. The specialised component manufacturer, operating from a British or Continental base, can build up a a yet to spread his favours among In free markets like the U.S. wide range of customers within a number of producers of the the component manufacturer Europe, in North America and

interesting example of global collaboration is the supply of forgings and other components by Komatsu, the big Japanese maker of earthmoving equipment, for the Cummins

British components industry is generally regarded as efficient and well-organised, providing a reliable service to the engine manufacturer. One major UK-based engine manufacturer reckons to source no outside the UK and most of

R" range of engines.

An area which has been a cause of concern to the diesel engine manufacturer in recent years has been the supply of certain castings, particularly cylinder blocks and heads. There have been problems both availability and quality. foundries, others, have been used to fill the gap, although the rise of the D-mark has made their prices less competitive. Recent investment and modernisation by UK foundries, supported by Government aid schemes, have improved the situation. The major suppliers, notably Birmid Qualcast and the foundry division of BL, are now better able to meet the diesel engine industry's requirements, though there is still some uncertainty over BL's future plans for its foundry interests.

On the forging side the biggest supplier of forged crankto the British diesel engine manufacturers is GKN; it supplies the major part of requirements, for example. Suppliers of crank-Don works of British Steel Corporation.

Many big engineering comsenies have their own forge and Engineering), filters from Autothe ability to meet at least part motive Products, Locker Airof their crankshaft requirements internally. But the scale advan-tages of the independent crankshaft producer, and his ability Engineering or TRW-these are to invest in the new techno-logies, generally lead the engine maker to source most of his requirements outside. Thus in the U.S. companies like Caterpillar and John Deere buy crankshafts from an independent supplier, Wyman Gordon; the new facility which this company has recently built at Danville. Illinois, has a capacity well in

Similarly, the engine makers can make their own camshafts and some of them do so, but the same arguments of scale and technology have enabled a British company Weyburn Engineering to build up a strong worldwide position as an independent camshaft supplier; Weyburn claims to supply over 30 per cent of the world's requirements. Weyburn was acquired by Carborundum more than 10-15 per cent of his of the U.S. in 1976 and, with its component requirements from own plant in the U.S., is well placed to take advantage of the those are highly specialised growing U.S. demand for diesel

Liners

"The engine manufacturer wants a sophisticated component at the heart of his engine which will be 100 per cent free of trouble—we are the specialists who can provide that component." This is how the major UK supplier of cylinder liners, Sheepbridge Stokes (part of the Sheepbridge Group) describes its role. Techniques like centrifugal casting are best handled by companies which are wholly committed to the business and have built up the manufacturing expertise over many years Sheepbridge Stokes has success fully developed a large direct export business for cylinder liners, especially in the U.S.

The other big UK producer of cylinder liners is Wellworthy, part of Associated Engineering. The same two groups, Sheepbridge and AE, are also major suppliers of pistons and piston rings. In most of these fields there is a strong competition shafts for the larger sizes of from Continental companies; in engine include Mitchell Shackie-pistons, for instance, Mahle and engine include Mitchell Shackle-pistons, for instance, Mahle and ton (part of the Mitchell Somers Rarl Schmidt are highly group), Laystall, and the River regarded for their technical expertise.

Cooling equipment from Serck or Covrad (Associated Cooling Maze or Vokes, bearings from Glacier Metal or Vandervell, valves from among the other components which are normally bought by the engine manufacturer from outside suppliers. Two imitems which have a portant special importance for the diesel engine industry are turbochargers and fuel injection

G.O.

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Fuel injection pumps

AT THE heart of the diesel engine is the fuel injection pump, which supplies fuel to fuel injection systems—comes the combustion chamber at high from Ambac Industries and pressure and at exactly the Stanadyne. The latter company right moment is each work supplies fuel-injection equipcycle. Some diesel engine ment to OEMs, John Deere, makers manufacture their fuel injection equipment "in-house." normally because the equipment is intrinsic to the main body of the engine and could not economically be manufactured by an outside supplier. Both Cummins and Caterpillar make their own fuel injection equipment.

But most builders of high-speed diesel engines buy from one of the two main suppliers of fuel injection equipment, Bosch and Lucas CAV, or one of their licensees. It is normal for both these suppliers to be used on high-volume engines and new customers. In August and there is fierce rivalry 1977 the company announced

Robert Bosch in Germany was the ploneer is this field. He developed first injection systems for fless! engines for by companies manufacturing under licence from Bosch.

Licences

From the early years Bosch recognised that it would not be able to supply all markets from Germany and so a number of licences were negotiated. One of these signed in 1931, was of these engines are exported of the U.S. There are already with the Lucas subsidiary C. A. over 1m CAV mary pumps in vandervelt now Licas CAV, service in the U.S. and at that time Bosch held a 49 per cent share in the com. At the time of the announce. UK are at Medway, in Kent, pany, Later Lucas assumed full ment of the U.S. venture, Mr. Sudbury, in Suffolk, and control and the dependence on: Tony Gill, now chairman of Finchley, in North London. Bosch know-how ceased. In Lucas-CAV, said: "Our opport CAV has a large share of the 1934 a U.S. company, American tunities to collect a share of the Bosch, was established in 'diesel explosion' in the U.S. Springfield, Massachusetts, to are considerably increased by make fuel injection equipment setting up there. U.S. engine for the American market. (This company, taken over during World War. It and now an independent company trading under the name AMBAC Indus tries, remains a major supplier of fuel injection equipment and continues to use the Bosch In 1938 Bosch signed an

agreement with a group of Japanese businessmen to form Diesel Kiki, now Japan's major producer of fuel injection equipment for diesel engines. Since the war another Bosch

licensee in Japan Nippondenso, has begun production. In India an associate company, MICO, was set up in 1951 and this enterprise makes fuel injection equipment and other com-ponents both for the Indian market and for export. In 1956 production of Bosch fuel injec-tion equipment began in Brazil. Meanwhile, Bosch has continued meanwine. Bosen has commined to strengthen its position in Europe, with subsidiary and associate companies expanding production in France, Spain and Austria. Bosch returned to the U.S. market in 1973 when it began building a plant at Charleston, South Carolina, to make fuel injection equipment. In the early years of this century the U.S. was by far the most important overseas

market for Robert Bosch and the company is now aiming to rebuild its position. Volks wagen, which is producing both petrol- and diesel-engined cars at its new American plant is one obvious customer for fuelinjection equipment, but clearly Bosch expects to obtain a subother U.S. manufacturers of and commercial vehicles.

diesel engines now invading the diesel engines are trying hard bought from the U.S. U.S. market, such as Perkins of to overcome. Thus on both Last month Garrett announced the UK and Deutz of Germany, economic and environmental that it would be spending 89m the big European manufacture grounds the turbocharger is on a new plant in France to turers of fuel-injection equip- growing in popularity.
ment will be siming to make Most diesel engine

builders who make their own Mack and Allis-Chalmers, it also supplies equipment for use by General Motors in the dieselpowered version of the Olds-Bosch's main European rival,

Lucas-CaV, has followed a similar strategy in the U.S. It was inevitable that as Perkins and other established customers sought to strengthen their position in the buge U.S. mar-ket, Lucas would need a production base to demonstrate its presence on the scene and to forge closer links with existing and new customers. In August plans for production of DPA rotary pumps at a new factory in Greenville, South Carolina, with an initial investment of \$3m Production was to start by ouring the 1920s and volume using components imported performed that its components imported performed that the production began in 1927 at the from the Lucas-CAV factory at claims a direct that is world wide diesel fuel injection advantaged in Kant and would gradually be expanded as the market for CAV products a further 21 per cent accounted

engine factory in Canton, Ohio, but Lucas-CAV had been or U.S.-owned vehicle companies a range of in-line pumps, for a number of years — John normally used in larger engines. Deers, for example, makes and for special applications, the engines in France incorporating major product in the Lucas-CAV equipment — and many CAV range is the DPA materials. of these engines are exported to the U.S. There are already

equipment to their engines and to demonstrate our commitment to meeting their requirements

as a matter of priority."

The "diesel explosion" of vital importance to Lucas because the diesel engine uses more Lucas-built equipment, both in value and in weight, than the petrol engine it displaces. As Sir Bernard Scott, chairman of Lucas Industries has explained: " Apart from the key opportunity for CAV in fuel injection systems, any switch from petrol to diesel makes a substantial difference to our fortunes since it involves the supply of heavier and more powerful electrical equipment. In fact every diesel to which Lucas equipment is fitted offers an additional bonus because it means about £80 per engine prore than its conventional

An important customer for a third of the Western world's the new plant was the Perkins automotive-type diesels are engine factory in Canton, Ohio, fitted with CAV equipment either by Lucas-CAV or by one production at the rate of over -im pumps a year.

The principal factories in the French market through its subaldiary, Roto-Diesel, and it has an associate company in Spain, Condiesel. There are licensees

supply lim for vital com- slavia and associate companies ponents. It takes close co-operation to match our fuel injection and Japan.

Another Lucas subsidiary in the UK, Bryce Berger, makes fuel injection equipment above below the range covered by the CAV branded products. Bryce pumps and injectors are used for industrial, marine and locomotive diesel power units and the company specialises in developing fuel injection equip-ment for particular customer applications. Hartridge, another Industries Lucas manufactures test equipment for fuel in ction systems.

Although there are other significant competitors, such as L'Orange in Germany, the main battle will continue to be between Lucas-CAV and Bosch, especially in the growing market passenger car diesels. A notable achievement for Lucas was the order from Volkswagen to supply fuel injection systems to the Golf diesel-engined car at the rate of about 250 units a day, supplementing supplies

In Italy Lucas-CAV is supplying fuel injection equipment for the new range of passenger car and light van diesel engines being manufactured at Foggia in southern Italy by SOFIM. a consortium formed by Fiat, Alfa Romeo and Saviem (part of Renault Industrial Vehicles). For both Lucas and Bosch the

supply of fuel injection systems for diesel engines is likely to remain a major growth area for a number of years. Clearly the market can accommodate both companies, as well as several smaller suppliers, but there will be pressure on all the companies in this field to develop more advanced systems, probably making greater use of electronic components and controls so as to enhance the efficiency of the diesel engine.

G.O.

Turbochargers

THE PRINCIPLE of using is Holset of Huddersfield. exhaust gases to boost engine heen a subsidiary of Cummins marine and stationary engines. Engine since 1973, more than 80 as long ago as the 1920s. The per cent of its turbocharger leading supplier of large turbochargers for this type of engine manufacturers; its custis Brown Boveri of Switzerland tomers include virtually all the and there are a number of other major engine and heavy truck chargers for this type of engine angine manufacturers; its cusis Brown Boveri of Switzerland tomers include virtually all the and there are a number of other major engine and heavy truck manufacturers in the field companies such as Perkins, Another major supplier is Volvo, Fiat, DAF, Berliet and Schwitzer of the U.S. Within Ford Out of a European GEC there are two turbocharger demand for some 250,000manufacturers, Napier in the 300,000 turbochargers a year in UK and Alco in the U.S., which supply other engine producers about 160,000 units. Other as well as GEC itself.

In the past 20 or 30 years the turbocharging principle has been successfully applied to high-speed diesel engines used in trucks and in other industrial and marine applications. It is widely believed that the use of widely believed that the use of turbochargers will spread to the smaller engines used in passenger cars and light vans.

Diesel engines normally turbochargers for trucks and deliver about 30.50 per cent less power than petrol engines of mersdale in the UK since 1970 and the site of the UK since 1970 and the UK since 1970 a

and compact, if is usually

no commercial vehicles. exhaust emissions and noise— go to the Skeimersdale factory. Like the European makers of two problems which makers of replacing castings previously iesel engines now invading the

Germany (Kuhnle, Kopp and Kausch) and AiResearch, an American-owned company which, like Mack Trucks, is a subsidiary of the Signal Companies.

deliver about 30-50 per cent less related applications at Skelpower than petrol engines of mersdale in the UK since 1970 similar displacement, but by and a new factory on this site is under construction. A big expansion of its casting and manufacturing facilities was recently announced in the U.S., and the turbocharger is relatively light and compact, if is usually \$2.7m foundry in Waterford. \$2.7m foundry in Waterford, reckoned that for an increase Ireland, for the production of of about 5 per cent in weight aluminium impellers for use in Bosch expects to obtain a sub-turbocharging can give a turbochargers. Annual produc-stantial share of orders from 40.50 per cent increase in power. tion of impellers is expected to other U.S. manufacturers of The turbocharger has the reach 15m by 1983 and output diesel-engined passenger cars further advantage of reducing of the Waterford foundry will

produce turbochargers for com-Most diesel engine suppliers mercial vehicles and small use of their long-established buy their turbochargers from passenger cars. This plant customer base in Europe to outside suppliers. In high-speed together with the expansion at expand their sales in the U.S. diesels of the automotive type

The main domestic competitive biggest European supplier increase Garrett's ability to together with the expansion at

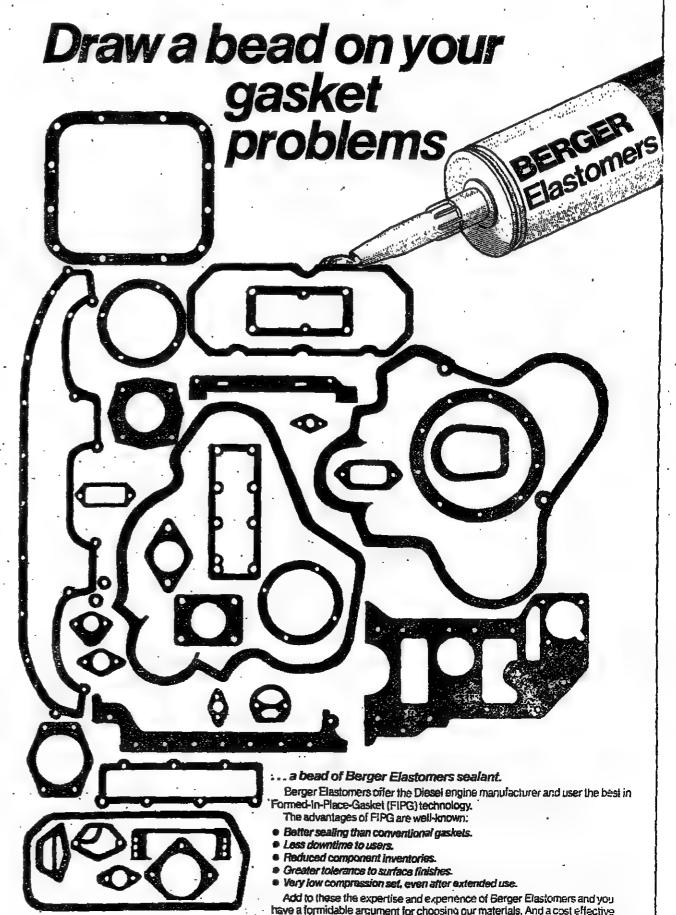
supply the growing European demand for diesel engine turbochargers.

Garrett is strongly committed to the development of small turbochargers for passenger cars. It is supplying the turbo-charger which is fitted to the Daimler-Benz 300SD car. claimed to be the first series production diesel car, which is aimed initially at the North American market, Daimler-Benz decided to equip the five-cylinder OM617 engine with a turbocharger because this represented the best compromise in terms of weight, bulk and production costs compared to a six-cylinder engine. The turbo-charged engine achieves an increase in performance of 43 per cent with only a 7 per cent increase in weight, compared to the naturally espirated fivecylinder engine.

Daimler-Benz explained the choice of the Garrett AiResearch TA 0301 turbocharger as follows: "In contrast to the conventional large-turbine-housing turbochargers used on heavyduty diesel engines for acceptable boost pressures in the upper speed ranges, the small Garrett unit was chosen because of its fast response time and good boost characteristics throughout a much wider range of engine speeds."

If the popularity of diesel cars grows as rapidly as some forecasters expect, then the application of turbochargers to diesel engines will grow in parallel. At present about 10 per cent of all multi-cylinder diesel engines produced in Europe are fitted with turbochargers; this proportion is expected to grow to 20 per cent. possibly in as little as five years'

G.0.



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The scope for further development

THE DIESEL engine boasts a nomy, even the best only conlong and distinguished career as verts about 40 per cent of the a power plant. Engines are in heat energy of the fuel into use-use covering the range from ful work. The remainder of the under 5 hp to 50,000 hp - a energy is lost to the atmomuch wider spread than that in sphere, either directly in the

It has attained this pre-emin- cooling medium. ence thanks to a low fuel consumption, which is superior to able interest in the use of in-that of its competitors in almost sulating materials, which may be all fields, and to a well-deserved reputation for reliability and durability attributable in part

creased over the years, both by if these efforts were successful increasing speed and by increas- could be of the order of 8 per ing levels of supercharging. The cent. increase in supercharging is

Questions

Consideration of future trends in the technical development of the diesel engine and in the expansion of its markets raises number of important

1. What scope is there further development of the diesel engine? The high-speed, light duty

category of diesel engines those used for passenger cars, taxis, and delivery vans, employ indirect injection combustion systems where the fuel is injected into part of the compressed air charge in a pre- or swirl chamber ,which is separated from the remainder of the air charge by a small passage or throat. If direct injection, as used in most other diesel engines, were possible it would give better cold starting, lower heat losses and an S per cent to 10 per cent improvement in fuel economy.

The problems of employing injection arise mainly from the wide speed range of such engines. These problems have proved intractable in the past, and while there is no guarantee that practical solutions will be found, a number of possible approaches are at lead to the introduction of

On the heavy duty truck and larger range employing direct respects?

Injection, while the engine has The competitors which the successful service operation.

any other type of prime mover. exhaust or indirectly via the

There is currently a considerceramic or metallic, to reduce the heat loss to the coolant. In an engine with a simple workto the absence of electric ignition.

The specific power output of diesel engines has gradually infused over the work half to the specific power output of the sp

Truck, bus and

Locomotive and

Medium-speed

industrial and

and generating

the century are:

Low-speed marine 8,000-40,000

over the period until the turn of

(a) In the smaller sizes and

especially in the small industrial

and passenger car field, further

development in the spark-ignited

petrol engine, including strati-fied charge engines in which the

fuel is not mixed uniformly with

the air charge in the cylinder

(d) Electric power generated from nuclear or fossil fuels in-

cluding vehicles operating with

periods. A breakthrough in

battery technology is necessary

only in competition for the very

highest powers in power genera-

increasing petrol engine fuel economy is by the use of higher

compression ratios. A consider-

able amount of work is currently

going on in this area, which is

characterised by the prevention

of weak fuel/air mixture

engine sensors and micropro-

cessors may be necessary for

The most promising way of

tion and marine applications.

(e) Steam turbines. Really

when combustion starts.

(c) Stirling engines.

(b) Gas Turbines.

vehicle applications.

If an engine with a compound likely to continue, involving a working cycle were used, how-wider use of two-stage turbo- ever, the gain in economy at charging for the larger engines. high engine load would be much We are also likely to see a much greater—approaching 20 per wider use of turbocharging for cent. In such a cycle the exhaust small high-speed diesel ongines, gas driven turbine and the supercharging air compressor are both geared in with the engine so that any surplus power from the turbine, above that necessary to drive the compressor, is available as shaft power from the power unit

> It is also possible to consider the addition of a Rankine bottoming cycle, either to a simple turbocharged engine or to a compound engine. Such a cycle is identical to that of a steam engine but employs an organic fluid rather than water as the working fluid. It takes in heat from the exhaust gas and turns a portion of it into useful

In this way a further improvement in efficiency is possible. giving a total gain of 30 per cent batteries charged during off-peak or so at high power, but at the expense of greatly increased complication, since an evapora- to give adequate range for most tor (boiler) is required together with a feed pump, an expansion turbine or reciprocator to develop the power, and a condenser to reject the waste heat. Since almost all the waste heat from the power plant is ejected into the atmosphere via the radiator and the condenser, rather than in the exhaust gases. they tend to be very bulky and to require large cooling fans.

2. Will the present advantage of detonation by the use of high of fuel consumption, reliability, turbulence levels to speed up and durability be maintained or combustion and/or by ignition will developments in competitors timing retard, and by the use present under study which could will developments in competitors offset these advantages? Are direct injection over the next new engines likely to arise strengths when approaching full five to 10 years. which will have important throttle operation. The use of advantages in these or other

FUTURE TRENCS Trend over next 20 years **HP** range

Engine type Small industrial Currently in widespread use except in U.S. Much wider use likely there, but first cost Currently widely used for taxi 40-100 Passenger çar, taxi

100-1.500

1,000-5:000

5,000-10,000

and light van operation apart from U.S. To meet fuel economy legislation the diesel could capture up to 25 per cent of total market if not harred by exhaust emis-Universally used now and

will remain so.

Universally used now and will remain so. Currently universally used apart from markets where low weight is important-eg, gas Usage pattern will continue. Diesel/steam turbine mix. Not likely to change. Diesels will have longer stroke and lower speed to take advantage of improved propeller efficiency.

in fuel economy can be quite striking. Data from Saab-Scania

using 11:1 compression ratio showed a fuel consumption

improvement of 9 per cent over

the standard U.S. test cycle,

while Ricardo test data on a car prepared by the Swiss engineer Michael May, using

5.8:1 compression ratio showed

15 per cent improvement over .

the standard ECE cycle. Pro-

vided the necessary high octane petrol (97-98 RON) is available.

high compression ratio petrol

engines could approach current

light duty diesel engines in fuel

economy in typical city opera-

Stratified charge engines occupy an intermediate position

between spark-ignited petrol

engines and diesel engines.

Ignition is by means of a spark,

but the fuel/air charge is not uniformly mixed during com-

bustion. Many variants are possible, but while the fuel con-

sumption of most of these is

not as good as that of a straight

diesel engine, there is an interest in the U.S. in employ-

ing the Ford Proco system in

the larger cars, and the late

injection types, such as the Texaco-TCCS and the MAN FM,

have abilities of running on

fuels with neither good octane

nor good cetane properties. These fuels which are typical

of the so called wide-cut fuel:

which may be obtained more

The resulting improvements crudes in the future than are

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Major competitor High compression ratio petrol

High compression ratio petrol Stratified charge

Possible small use of gas turbines for luxury bus coach, and Stirling engine for low noise city bus. Wider use of electrification on densely used railway lines. Wider use of electric power because of pressure on liquid

Steam turbine if residual fuel quality becomes very bad.

The use of gas turbines for a breakthroughs

diesel engine.

Durability. In order to

Silrling engines have an even

current diesel fuels and or may be obtained from coal, could be important

in the longer term. wider range of duties than seen in their current pre-eminence in ping and stand-by service in power generation has been forecast for many years. problems still exist, however. and to compete with the diesel engine. required in the following

Efficiency. Temperature limitations of materials have restricted and still restrict the efficiency to below that of the

schieve any ressonable efficiency at part load it is essential to use a regenerator given problems of durability but are now improved.

High temperature materials. In the sizes of turbines of interest for vehicle and rail traction purposes, cooled turbine blades are not feasible, and currently available metals have limited the peak cycle temperature and hence the efficiency and are furthermore very expensive. A breakthrough in the use of engineering ceramics could have an important influence in terms both of fuel economy

diesel engine-their very lownoise and low levels of emissions of exhaust pollutants chargers are already very make them attractive but they expensive and could ultimately also have a number of problem become scarce. There is, now areas where breakthroughs are ever. a considerable effort required:-

or diesel engines. Their inherently high cycle efficiency

(hydrogen or helium) at high. Fuel economy legislation pressure and temperature favour the diesel engine. must be retained in the. larly demanding in its opera-

tional requirement. While both the gas turbine and the Stirling engine also have advantages in being able to: burn a wide range of fuels, the

service to the 1990s, and only: then if the requisite break. throughs occur. 3. With increasing pressure on liquid fuel reserves, will fuel

characteristics change in ways which will favour one or other Barrier type of prime mover? Apart from a possible lower-

ing in the cetane number of diesel fuel, which would give problems in the light duty diesel engine, a possible need to run on wider cut fuels towards the end of the century; and a gradual worsening in the quality of the residual fuels which are burnt in the largest diesel engines, changes in fuel quality in fuels derived from to have an important effect on engine type or operation in the next 10 to 20 years.

manufactured from natural gas, or ethanol from the fermentaa spark-ignition engine than a: diesel engine, as their low. cetane numbers lead to major combustion difficulties.

4. Will pressure on mineral resources lead to shortages of certain strategic metals which could limit either the technical

longer history than either petrol engine or its scale of produc-or diesel engines. Their tion?

inherently high cycle efficiency. The high alloy materials—close to and ultimately which are used for the prepossibly exceeding that of the combustion chambers of indirect injection diesel engines and for the turbine rotors of turbo-

already being expended to pro-First cost and bulk. Current duce engineering ceramic after-engines tend to be expensive natives. Success in this area and bulky.

Control. Currently achieved risk to supply.

by varying the mean cycle 5. In the last twenty years or pressure but requiring 4 so legislation has begun to have multi-stage high pressure an important impact on engine and development. What compressor, and involving design and development. What inefficiencies with rapid loads effect will current or future legislation have on the diesel Sealing. The working fluid engine and its markets? Fuel economy legislation will

The easiest way of meeting very low noise level targets is system over a long period. Very low noise level targets is
High temperature/high by cocooning the engine in
pressure materials. The "hot sound-insulating material or by
end of the engine is particular placing the engine in an
larger determination in the control of the engine in an acoustic tunnel. Either way a considerable reduction in noise is possible, but at the expense of weight, bulk, cost, and ease of access for maintenance. The engine structure may also be modified to reduce noise levels, need for further development is modified to reduce noise levels, in likely to limit their use in noise levels are level to reductions in noise levels are lower. Legislative levels over the next 20 insuperable targets for the diesel engine.

Exhaust emission levels however, and especially exhaust particulates, could prove a most difficult barrier for the diesel engine, particularly in the U.S. The small industrial engine market in the U.S. and the passenger car market worldwide could provide very large future markets for the diesel penetration of up to 25 per centfor passenger cars has been talked about. Diesel engine exhaust particulate levels of ext 10 to 20 years. some 20 times those of petrol Should appreciable quantities engines are coming under heavy of methanol become available, fire in the U.S., however, and the legislative limit of 0.2 g/mile which has been proposed tion of vegetable matter, they for 1983 model year cars would would be much better burnt in prove difficult for the smaller diesel cars such as the Volkswagen Golf, and probably impossible for the heavier cars such as the Oldsmobile.

These levels are being justified not only from the standpoint of posible health effects but also of air quality. Even be harmless, the effect on the "quality of life" emitting large. amounts of solid material into: the atmosphere will remain a focus of attack on the diesel. engine, and this attack if up-held, could spill over into an atack on truck, bus, and other diesel engines operating in urban areas.

While it is difficult to forecast whether or not these U.S. legislative proposals will be upheld, they undoubtedly pose the most serious challenge which the diesel engine has had to meet so far. The challenge is made even more severe by the low levels of gaseous NOx which are required If the U.S. legislative proposals are en-dorsed there is always the pos-sibility that other countries will follow suit. Experience with earlier exhaust emission legislation would indicate, however, that apart from Japan the outlook for the diesel would be more optimistic in other countries. countries.

The likely market trends over the next twenty years or so are shown in the accompanying table. The large market open ings available are in the small industrial and light duty ventile industrial and light duty ventile in fields where the potential sales respecially in the U.S., are very large. Exhaust particulate legis, lation could however, com-pletely shut off these potential ii S. markets.

Fuel quality trends are medicallikely to have any large energy on engine design or usage in this time scale, although design could influence the power end of the century. In certain special markets, however, methanol and ethanol might become available but would best be used in spark ignition engines, either with or without charge stratification.

In the smaller size of engine.

high compression ratio develop ments of the current spark-ignited petrol engine are likely tender to the diesel engine None of the other alternative powerplants would appear to have any promise of a large market share in the next

20 years. The compound diesel engli with reduced heat losses bits probably without the complications of a bottoming cycle may be used in high-power, long haul trucks in five to ten years.

C. C. J. French Director, Ricardo Consulting

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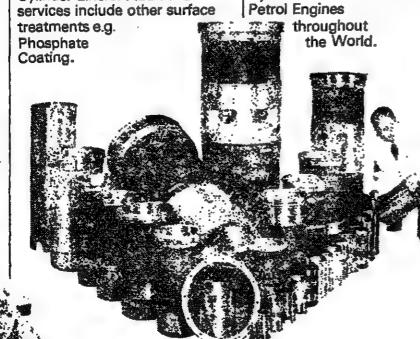
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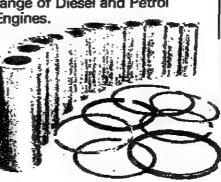
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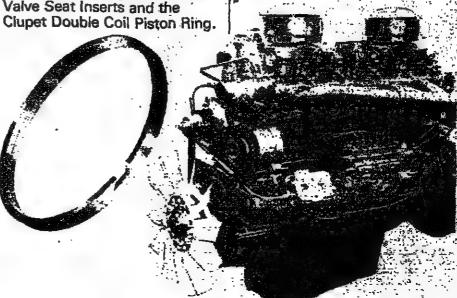


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A monument survives in the mist

T THIS TIME of year you onder why anyone actually ves in Venice at all. The vening rish hour trip from fazzale Roma, the end of the auseway from the mainland to he centre of the old city in a ammed vaporetto steamer is, if ossible, even more uncomortable than the equivalent xperience in a Rome bus. It is very damp and very cold.

Olly black water laps menac-ngly just a fost or so below he steps into St. Mark's Square-then the fog descends, the eriest moment of all, the lights in the palazic along the Grand anal are reduced to the palest limmer, while other boats glide bout like half-seen ghosts. You lmost expect to wake up in the norning and find the whole

Between November and March very year the scirocco wind lrives extra water up the idriatic, into the lagoon and up nto the square itself, on ave ge 30 times. Even when it is lry, everyone, seems to be rearing shoes with very thick ubber soles. When the acqua

No wonder then that so many oreigners, when they see all his and the back capals where ubbish floats along amid the rumbling stucco and rotting poarded-up doorways, assume hat the fate of Venice is sealed, hanks to the inertia of the talian authorities. Indeed, lve years after the Rome Par, and wrangling to which Italy's lament passed a special law to administrative structure lends tolp the city, progress towards itself, and of the dilemma of the rescue seems maddeningly reconciling conservation with low. Only last month the economic growth. This latter is Covernment rejected every one

Gaetano Stammati, the Public lagoon, Malame to, Lido and Works Minister, has formed yet Chioggia, whenever a storm another commission which is to threatens, publish the result of its cogitations by next March.

Officials of the city and the Veneto region are reluctant to dramatise matters, an attitude which can easily be interpreted as complacency. In part it stems from a genuine conviction that things are not as bad as sometimes made out — "Venice is not going to disappear to-morrow, whatever the foreign papers may suggest" says Sig. Marlo Rigo, the Socialist mayor and in part from an understandable inditation at having to run the hop the number of t

Not sinking

To a certain extent a more relaxed line is justified. Now that industry no longer may extract water from the subsoil, Venice is for practical purposes tacked up next to the Doge's that it is rising should be tacked up next to the Doge's that it is rising should be tacked up next to the Doge's that it is rising should be taked as warily as suggestions nto an improvised walkery that the leaning tower of Pisa is moving back to the perpenditure water. cular. Moreover the absence of serious damage to the city from the devistating earthquake of 1976 in Friuli, not so very far to the north, is proof of a kind that its foundations are pretty solid.

> Venice is an extreme case, both as an example of the sloth epitomised in the argument over

Government, and they would no

doubt be strongly resisted by

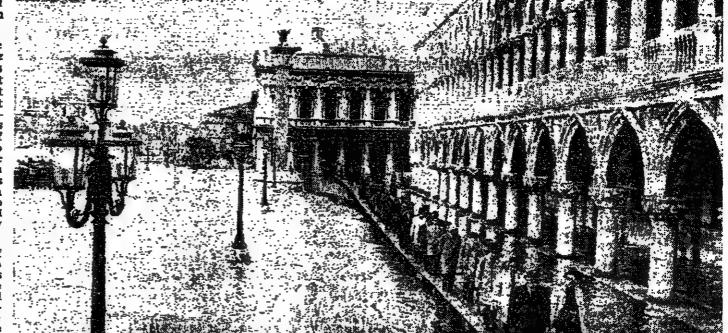
Norbiton

No. 14

That would obviously solve the problem of the acous alte -but only, so its opponents claim, to the possible detriment of the functioning of the port of Venice, the city's largest single employer, which gene-rates twice as much income as tourism. Whatever the risk of extra pollution, the Veneto authorities want to raise traffic from the present level of 24m tonnes annually to nearer its capacity of almost 50m, with the hope in turn of pushing up the number of jobs provided from 35,000 to conceivably

But Sig. Rigo argues that if anything went wrong with so sophisticated a dam, ships could be trapped inside the lagoon, revenue be lost, and business could move to somewhere less troublesome, like Trieste. As for pollution, he points out that the historic city, with its 100,000 inhabitants has now switched from naphtha (with a high sulphur content) to methane for its gas supplies. The acque alte do at least have the advantage of increasing the circulation of water through the canals, helping to keep Venice a little cleaner than it might otherwise have been. Only once pollution has been properly controlled, should the inflatable dams be installed. In the meantime, according to Sig. Mario Ulliana, the regional commissioner in charge of dealing with the city's problems, L 38bn (£36m) of anti-pollution work is under way, and a further L120bn is planned.

reconciling conservation with case. The heart of the economic growth. This latter is pessinist's is the sheer impossibility of getting things done quickly. Venice affords a textif we schemes submitted in the schemes — in particular quickly. Venice affords a textesponse to a tender, for pro the proposal for a sort of giant book study of the disadvantages to the control the water level inflatable dyke — to close off having too many tiers of the lagoon. Instead Sig. the three channels into the government (a lesson, although



"When the acqua alta arrives, trestle tables are hastily assembled into an improvised walkway above the water."

advocates of UK devolution). Central Government, the reself all have a finger in the pie. Rome is responsible for the tidal problem, and for restor-ing public buildings, the region for dealing with pollution, and for installing a decent sewage system. The city itself is responsible for refitting and restoring the houses in which Venetians have to live, so that the steady drain of population away from the city since the

1950s is finally reversed. Then

Britain is not Italy, that might there are 30 organisations in 14 munist-Socialist coalition, which countries, and the wealth be- naturally tends to see things national "co-operative" along hind them, all devoted to differently sometimes from the "saving Venice." The longer Christian Democrat controlled gion and the city commune it-money made available stays region. idle in the banks, the angrier

they are apt to get.

It would all be very well if everyone were pulling in exactly the same direction: but in Italy things are rarely so simple, and least of all Venice, for which there often seem to be as many solutions as there are benefactors. As an added complication, old link between the historic administration is buying up the city and its poorer onshore cities of northern Italy, like homes, restoring them, and cousins of Mestre and industrial Venice, Padua, and Vicenza then hoping to keep the rents Marghera have elected a Com- with central Europe. The low enough for the original

Top-level Canadian mission led by Mr. Jack H. Horner, Minister of Industry, Trade and Com-merce, in Peking, China, for

Services opens two-day conference on lotteries for Local Authorities, Imperial Hotel,

Blackpool. Sir Kenneth Cork, Lord Mayor

of London, receives Agents General of Canada at Mansion

CENERAL

trade talks.

Competition

House, 11 a.m.

OFFICIAL STATISTICS

Provisional December for wholesale price index.

Christian Democrat controlled

For the Veneto authorities, Venice is only a part of an inter-nationally-slanted master plan for the region. This would include a canal link inland to Padua, and ultimately into in-20th century version of the age

with eight other regions from Austria, Yugoslavia and West Germany, and Italy, dubbed Alpe-Adria, to promote the interests of an area which has always felt a little uncomfort-

able as a north eastern appendage of Italy.

Inevitably, at Ca' Farsetti, the dustrial Lombardy, and a brand Venice town hall, people tend new Venice-Munich motorway, a to concentrate more on day-today problems. The left-wing

occupants to come back, after an enforced stay in what the Italians crudely describe as a casa-parcheggio or house to park yourself, outside the city.

Sig. Rigo has a pretty drastic idea of what should be done, which will not endear itself to the international cultural community: "You simply cannot have a free market of housing here. I want

a law to stop flats and houses in Venice being sold to tourists. They must be kept for the Venetians. Remember, here we cannot build upwards or outwards." Those in search of the ultimate in elegant holiday apartments will be relieved to know that thanks to the opposition of the region the scheme is unlikely to get very far. Nor probably will another whereby Venice proper should be made unit, cut loose from Mestre and

In the meantime, it can take up to two years for approval restore a single house, a symptom of what Sig. Rigo declares somewhat euphemistically, to be the "excessive perfectionism" which has bedevilled plans to bring back Venice to full health. But revival work is going on. Scaffolding surrounds many lovely palazzi. The floor of St. Mark's cathedral undulates disturbingly, but a man was lovingly restoring a bronze font

lld in a side chapel, What should never be forgot-ten, too, is that "saving Venice" means "saving" everything-not just the odd church and a few fine bouses. The task inevitably will take a monumentally long time, and the arguments over how it should be done will drive many a foreign well wisher, and not a few Italians as well, to something near despair. But at least the city is not simply going to disappear one of these foggy

Letters to the Editor

Slumpflation in Britain

rom Mr. H. Saxon Tate

Sir -- Samuel -- Britten -- ended: is December 14 article by sayng "A political and economic -ystem which forces people not o work when there are unsatisled needs which their producion could supply does not leserve to survive." This Imnediately raises the question as it has survived and whether it will survive in the

The Economic League is only ber of people on the extreme Right and the extreme Left who are putting a considerable effort into engineering the system's lownfall. One of the tools commonly used is this fallacy of the "lump of labour." To dismiss the fallacy one only needs a reasonably simple explanation of the modern British pheno-menon called "slumpitation."

I suggest that this lies in lencient demand: that deficient, H. Saxon Tate, demand has been brought about. The Economic League, by insufficient discretionary dis First Floor, cosable income that insufficient Ambalta Hou discretionary disposable income Palace Street, SWI. has been brought about by low productivity; and that low productivity; has been brought about by the general attitude of

the British people. We know very well that one working hour in the United From Mr. D. Wilkins states or Germany adds some Sir, I was intrigued tates or Germany adds some Ski-I was intrigued to learn hing between two and three from Mr. Edward's letter times the value that one work (January 4) that the Greater Ing hour produces in Britain: London Council's award-winning desire to contain their costs, Labour leaders in North refuse transfer station at Brent and employees desire to main-America have an attitude which ford is painted in "Norbiton No. tain or even improve their says "Look at the boss riding about in that Caddlac. One day district gives its name to no less I will own one of those." This than 13 other shades and if so is an attitude which helps to increase productivity and thus increases demand, either through higher purchasing power or lower cost of goods. helr opposite numbers in Great From Er. T. Butes Their opposite immeers in creat a root and a louise Britain by and large, will say Sir, MD (December 21) in"Look at that idle rich man rid vites air passengers to institute ing about in a Relis-Royce—I an organised grading system for haven't got one therefore he the world's airports, akin to shouldn't have one—take it off IFALPA's. He also states that him." This unproductive atti many airport authorities, and the led to the current situation of the state of the latest archaelty with a superially the British Airports.

the standard of living of other change in attitude. It is encour passengers than any other air absolutely essential iging that in the last few years part in the world), Kennedy. Public address systems British companies have started Faunicino, and Orly. to put a considerable effort into programmes designed to help one of my black star airports, ing but totally uninformed staff, employees understand the and there are no other flights should be closed down and the aconomic workings of their arriving or departing, these air use of the word "delayed" organisations. This is evidenced ports are "clean, comfortable, by the numbers of companies and sometimes swift to pass the producing their annual through." But MD's planning, the part and accounts in a form based on his list of "pax" flight number on a button which the layman can easily the producing the passing and sometimes are contained as a substant to a state of the pax of th which the layman can easily understand, making it freely spending time and effort help- vital need.

mg people understand the confree enterprise parts of the however, in the real world, it is

appears designed to avoid teaching children that if they try to get more than their share they cated to each district in the long time. The great majority will find themselves steadily getting less and less. As the great majority of children are today and appropriate colour for Brentschools, there appears to be ford and use of this would only one remedy and that the normal procedures and only when these have failed is there normally recourse to normally recourse to not necessarily more pleasing. The real dilemma is indeed a remedy lies in the hands of the not necessarily more pleasing Government. Only a thange in from the aesthetic point what we are taught can David J. Wilkins, eventually after the the 118 Gloucester Road, shouldn't have more than me. Norbiton, from the aesthetic point of view.

therefore, if he has take it off Kingsion upon Thames, Surrey him" syndrome. Significant changes to schools curricula are needed and these are only likely to come from a free enterprise

The strike weanon

certain trade unions and various From Mr. L. Sutton

other parts of the establishment. Sir,-It is easy enough I suggest that until we get a speak in a general way of desires Government which is strong and principles, but more difficult enough, determined enough and to see where the one ends and far-sighted enough to do so, this the other begins. country will continue to suffer

No doubt Mr. Imrie (Decemfrom high unemployment, low ber 19) regards it as a point of productivity, insufficient principle that he should provide demand and insufficient invest-ment, all of which add up to a dren; no doubt, also, governments desire to provide the civil ments desire to provide the civil service at reasonable cost to society. Should Mr. Imrie abandon that principle in order to satisfy the desires of government? Or should he instead satisfy Mes. County (December) satisfy Miss Gough (December 28) who argues that "any employed person is free to resign if he dislikes his conditions of employment" and sacrifice his family's standard of living rainer than give in to his own principles (or are they now

desires")? To the extent that employers ford is painted in "Norbiton No. tain—or even improve—their 14." Does this imply that our standard of living, then Mr. district gives its name to no less Brittan (January 2) is right than 13 other shades and if so when he says that we are in the

The real dilemma is indeed

moral one, but it does not lie between principles on the one hand and desires on the other The real dilemma for people such as your correspondents surely occurs when, for example es both Miss Gough and Mr. Imrie have pointed out—govern-ments decide unifaterally to abrogate agreements reached through normal negotiating procedures or act unfairly in their interpretation of their own " pay policy". In such circum-stances, when governments act immorally, are employees wise to refuse to take up the only weapon left available on a point of dubious "principle" which may, in any case, include a desire (and a perfectly reason-able one) to be seen to be acting more responsibly than the other

L. A. Sutton. 12, Peaslands Road. Saffron Walden, Essex.

Do not blame the worker

From Mr. S. Penwill Sir,—In your general news summary of January 3 it was stated that "more people reached work than many industries (sic) had feared. worker is often blamed for the troubles of industry, but is this

S. W. Penwill, 158, Fenchurch Street, EC3.

The passenger and his needs

works hard and thrives soon senger ("pax") requirements and he must hand over by far and seek to incorporate them in the greater part of his income their planning. As a "pax" their planning. A might be far safer to join a with respect, disagree. Many union? "modern" airports, such as I submit that we shall con Baissy Narita Landretter, Gattinue to suffer from unemploy. wick and "heaven" itself ment problems and fail to match. Reathrow—would immediately the standard of living of other be awarded my black star. My main industrial countries until white star would grace the conthe population of this country venience of O'Hara (which copes accept the vital need for a admirably with more flights and

True, when passing through programmes designed to help one of my black star airports, ing but totally uninformed staff, based on his list of "pax" flight number on a button requirements, all too often fails adjacent to a television screen to meet passenger needs because available to all employees and the planning ignores the most

The an ideal world, all that an lents.

airport requires is a long cortic the hiccup and the then curred alone will not be enough to have series of desks with adjacent the baggage game probab is substantially muted by the wide, less than 10 per cent of is still necessary for each piece Knollys House, current education system which flights are "on time," often the of baggage to be manhardled at 11, Byward Street, EC3.

have adequate facilities to ensure a comfortable and reasonably pleasant wait, for periods ranging from one to 12 hours, for hundreds if not thousands of frustrated, ally diminished, I doubt whether agonised "pax." None of my people would complain at the resultant, though small, amount as far as I can discern, has even attempted to meet this now routine hazard of air travel. Congestion (or the more fav-oured expression "chaos") will

introduction of cheaper longdistance travel Segregation between those people who are forced to wait and those who are boarding flights which are "on time" is

greatly increase with the steady

· Public address systems, which are often inaudible and which appear to be operated by charmand be immediately rewarded with complete, continually updated, accurate information on the flight including the cause of

The baggage game probably much effect, and as far as I am facilities for boarding and leav-aware it only happens in the ing aircraft. Unfortunately, source of fun and games to all connected with air travel and it economy. Moreover, the effort an undoubted fact that, world remains a mystery to me why it Terence Bates.

the hiccup and the then current,

From Mr. T. Butes

delays being caused by good least six times for every flight.

Sir, MD (December 21) in and unavoidable reasons. Any A small container, which can vites air massengers to institute good airport must therefore readily be loaded into the aircraft container by forklift, could surely b cused at check-in and baggage delivery. While the passenger payload (and there-fore revenue) might be marginresultant, though small, amount of extra leg room available.

> Hhe system outlined by MD will have two immediate reby car will have to sit furning outside the access tunnel until there are fewer cars inside the airport than car-park spaces: in other words, no drop-off facilities where passengers, their wives or husbands, or, dare I say it, even a chauffeur, can merely drive into the airport, drop off the passenger and drive directly out again.

> If a mere "pax" may be permitted to comment, one of the real problems at Heathrow is the mixture of administrative and other office buildings with passenger facilities. The result is to impair the efficient operation of all. If authority is given for a fourth terminal, it ought to be on terms that office ac commodation and associated facilities and car parking of an equal area is transferred to another part of the airport. Airlines might be invited to lease the vacant space for passenger lounges with a consequential increase in good will.

Today's Events

COMPANY RESULTS Final dividends: Caplan Profile Group. Reo Stakis Organisation, Interim dividends: Brown and Hogg Robinson Group. Interim figures: Negretti and Zambra. Great Northern Invest-

COMPANY MEETINGS See Week's Financial Disry on Page 53.

EXBIBITIONS

London International Boat

door Holiday Exhibition and Motor Caravan Show (ends January 14). Model Engineering Exhibition, Wembley Conference Centre, Middlesex (ends January 18). Racing and Sporting Motorcycle Show. Horticultural Halls, London, SWI (ends January 14). BFM Furniture Show, National Exhibition Centre, Birmingham

SPORT Soccer: F.A. Cup, Fourth Show, Earls Court (ends January Round Draw, London, noon, 14). Holidays 79 Camping Out-Rugby Union: Announcement of

(ends January 10).

England training squad. Racing: Loicester, Sedgefield. CITY OF LONDON LUNCHTIME MUSIC

Rallows by the Tower recorded music, 1 pm. St. Lawrence Jewry next Guildhall, plano recital, Mark Troop, 1 pm. St. Michael Cornhill, organ recital, Michael Stuckley, 1 pm. CITY OF LONDON SPECIAL CHURCH SERVICES

St. Martin, Ludgate. Epiphany carol service in aid of the Greater London Fund for the Blind, Cecilian Singers directed by George F. Tull, 1 pm.



"Nice material, Marco," observed the Duke, fondling the silky suit-length which his recently returned Far Eastern emissary was displaying on the steps of the Palazzo. "But where's the tailor to do it justice?" You can be sure Marco Polo had the answer. For this traveller extraordinary had brought hitherto unknown

enterprise and variety to the trading profession. establishing a tradition most notably exemplified in the modern world by The Ward Group. For example, Ward companies manufacture over

1 million tonnes of Portland cement per year, to be sold

It was a Ward division which recovered two massive steel structures—each the size of a football pitch and weighing over 11,000 tonnes-from the North Sea oil fields, to recycle for British industry. Another Ward Group company is currently supplying

switches and crossings for the Hong Kong rail system. Enterprise and variety. Just two of the many attributes of this Sheffield-based organisation, practised with a panache which would have filled Marco Polo with professional envy.

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Head Office: Albion Works, Sheffield \$47ULTat: 0742 26311.



PRINCIPAL ACTINITIES OF THE WARD GROUP INCLUDE: PAW MATERIALS FOR THE IRON AND STEEL INDUSTRY; CEMENT MANUFACTURE AND DISTRIBUTION; QUARRYING; COMCRETE PRODUCTS AND ROAD SUPFACING; MOTOR VEHICLE DISTRIBUTION; MACHINE TOOLS AND METAL WORKING MACHINERY, INDUSTRIAL PLANT, FOUNDRY SUPPLIES; CONSTRUCTION AND CRUMERING EQUIPMENT AND ACCESSORIES; GENERAL, PROCESS AND RALWAY ENGINEERING; STEEL PRODUCTS; SHIPBREAKING; BULLISTIPIAL, DISMANTLING; PROTECTIVE WEAR, ROAD MANLAGE, WAREHOUSING AND DOCK FACILITIES.

P'NDING DIVID'NDS

CMT forecasts expansion as product demand rises

In the current year, demand for the products of Central Manufacturing and Trading Group is continuing to improve. particularly for industrial services, Mr. Norman Hickman, the chairman, tells shareholders.
Mr. Hickman says that while

nation looks cloudy, nevertheless he believes the group is well placed to continue its expansion in the foreseeable future.
For the year ended July 31,
1978, pre-tax profits were £3.73m

against £3.94m from turnover of £60.09m compared with £56.32m. The chairman explains that the last few years have seen a lack of economic growth in the UK indeed many industrial sectors have been depressed. It is with this background that the group reported slightly lower profit than last year, which was unbelpful

itself a record.

Despite not being able to improve on last year's profit figure, the circumstances and competed it is felt that the result is satis-

BOARD MEETINGS

The following companies have notified dates of board meetings to the Stock Exchange. Such meetings are usually held for the purpose of considering dividends. Official indications are not available as to whether dividends are interims or finals, and the sub-divisions shown below are based mainly on last year's timetable. Interims:—Brown and Tawse, Hogg Robinson, H. Samuel.

Finals—Capian Profile, Reo Stakis Organisation.

FUTURE DATES -

economic All divisions traded well under

industrial services — generally traded well with the exception of industrial rubber products where demand slackened in line with the UK rubber industry.

The volatile nature of metal processing was once again shown by this division slightly increasing its profits on a 20 per cent lower turnover than 1977.

The group experienced the continuation of the world wide recession in demand for steel; nevertheless the steel stock-holding division performed creditably with sales increasing by 8 per cent but with reduced

Despite problems the group's management is geared to grasp opportunities and will no doubt improve performance, "We remain committed to growth which we wish to achieve both organically and by broadening the base of our products and services," Mr. Hickman states. Meeting, Birmingham, Feb-

4.5p, against 3.9p net.
Tax for the half year is up

Brockhouse

sees further

WITH A satisfactory outstand-

ing order book and barring outside influences, Mr. R. J. H.

Parkes, the chairman of Brock-

house, says the directors expect

to make further progress in the

petitive edge in the market seg-

ments in which we operate has

been sharpened during the

year." he says, and adds that given this and fair market con-

ditions, "we look to the future

As reported on November 24

1978, taxable profits for the September 30, 1978, year rose from £2.62m to a record £3.54m.

Sales were ahead at £69.4m

'I am satisfied that our com

progress

current year.

with confidence.

February I, at noon.

from £5.166 to £5.506.

Downturn at D. C. Thomson

were down from £4.37m to £3.21m in the year ended March 31, 1978. In the year ended March 31, 1978.

Investment income amounted struck this time after exchange to £2.76m against £2.29m and net fluctuations of £355,204, pre-tax income was £2.72m compared profits fell from £3.43m to £2.89m with £3.26m previously. income was £2.72m compared with £3.26m previously.

per £1 share against 19.635p. The company, based in Dundee, is private and unquoted.

Whessoe prospects

IN HIS annual statement, Lord Erroll, the chairman of Whessoe, gays that for the current year, Alton, light engineering and overseas heavy engineering aubsidiaries are expected to main-tain performance and profits much in line with the previous

However, the outlook for its main UK heavy engineering operating units is less assured, he

Lord Erroll explains that current year prospects, though rea-sonably assured for Alton and light engineering, still depend on

INVESTMENT

OPPORTUNITIES

DIAMONDS FOR INVESTMENT

DIAMOND SELECTION LIMITED

TRAVEL

tersham House, 57a Hatton Garden. ndon E1N 8JD. Tel. 01-405 8045.

U.S. \$30,000,000

Medium Term Loan

Chemical Bank

International Group

Crocker National Bank

Algemene Bank Nederland N.V.

Continental Illinois National Bank

and Trust Company of Chicago

Managed by

Provided by

Credit Suisse

Dresdner Bank AG

(Grand Cayman Branch)

Trading profits of D. C. further successes in winning Last year pre-tax profits totalled Thomson and Company, Scottish additional work for heavy enginers owner and publisher, earing and performing it profit- 20p share, paid in October, was

ably.
As reported on December 14, The dividend is 19.9325p net 1978. Completed sales were higher £1 share against 19.635p. er at £81.09m against £49.97m. A divisional breakdown of sales and trading profits, £4.84m

(£4.99m), shows; heavy engineering £57.54m (£34.96m) and 11.38m (£2.39m), light engineering £4.65m (£2.55m) and £0.71m (£0.87m), and Aiton £18.9m (£10.45m) and £8m (£1.74m) respectively.

STAVERT ZIGOMALA

A PROFITS improvement is announced by Stavert Zigomaia and Co. (Hidgs.), furniture wholesalers and investment com-

The trading profit is up from £2,451 to £2,989 in the half year to September 30 1978. With the inclusion of the investment in-come the pre-tax figure comes out at £14,720, against £13,639

COMPANY

NACIONAL FINANCIERA S.A.

SU.S. 100.000.000 Ploating Rate Notes
in accordance with the terms and
conditions of the above mentioned
ibating rate notes the interest rate
applicable for the six months period
beginning january 5, 1979 has been
fixed at 135 p.s.
EANQUE INTERNATIONALE A
LUXEMBOURG
Societé Anonyme
As Fiscal Agent
Luxembourg.

VECTIS STONE GROUP LIMITED

ART GALLERIES

CLUBS

This announcement appears as a matter of record only.

Fuqua Industries, Inc.

against £60.8m and the dividend is increased from 3.6236p to NOTICES Meeting, West Bromwich,

● NEWS ANALYSIS—MANAGED FUNDS

The best of both worlds

GROWTH OF L&G PENSION

MANAGED FUNDS

BY ERIC SHORT

can identify his assets without

much bother. And be is not

naving for any investment

ment risk himself, and gets the

full benefit of good performance

If the fund performs well, the value of the units rises, and

conversely if it performs badly. This unitised concept was first

devised by certain unit trust groups as a means of offering

equity investment to pension schemes, and thereby attracting funds. But once the life com-

panies entered this field, they

proceeded to dominate the

market. They had the contacts

with employers and schemes

But more importantly, the life

companies could offer invest-

ments not only in equities but

in the whole range of invest-

Pension funds investment can

be adopted in apportioning

reviewing these proportions. And there is the tactical deci-

decisions are best left to the

experts and this pooled fund technique provides professional

tion on which there are

schools of thought among life

Many life companies regard

investment as a subject to be

management

The day-to-day

Investment

companies.

already on their books.

ment media.

1,000

800

INVESTMENT INVESTMENT Management Services to Pension Funds have now become big business for life companies. Last week, Britain's largest pensions company, Legal and General Assurance. announced that funds managed by subsidiary Pensions Management had passed the £1bn mark

in just over eight years.

The funds managed by Pru-Prudential Corporation group, are approaching £400m, those by Standard Life's subsidiary nearly £200m. In all, the amount of managed funds operated by life companies is estimated at £2.5bn.

This impressive growth in managed pension funds has taken place within the past ten Before then, employers years. using a life company for operat-ing their pension schemes had their contributions invested in a central fund, together with all other pension plans of that life

This fund was invested across the whole range of investment media-equities, property, and fixed interest—and the return made to the client depended on two factors. These were the investment performance of the managers and the amount of profit the actuary was prepared to release following his valua-

But employers, advised by their pension consultants, were becoming increasingly dissatisfied with this "insured scheme be method, despite the good returns being provided. First, they wanted to bave their scheme assets easily identifiable and not completely lost in a common fund, and second, they wanted some involvement in the investment management

Finally, under the insured scheme method, employers were he broadly divided into two functions. There is the strategy paying for investment guarantees that they could more effectively carry themselves.

the assets between the various investment media and constantly In short, employers were looking for the best of both worlds in a self-administered scheme and in a scheme run by a life sions to be taken within each different type of investment in order to ensure a good return. company. The solution put forward was the managed pen-The solution put sion fund concept.

This is quite a straightforward procedure. The financial institution operates a common investment fund on the unitised principle. The pension scheme, in making its investments, buys units in the fund just as an individual investor buys units in a unit trust. The funds are valued periodically, usually month. Thus, the value of the pension scheme assets are simply the value of the units held.

BIDS AND DEALS

should leave well enough alone. So they only operate one fund a mixed fund, in which the life company decides on the mik between the various investment

disagrees.

the client should be able to decide on the investment mix in conjunction with his consultant and other advisers. So they offer a wide range of funds covering equity, property and fixed interests as well as a mixed fund.

In practice, the difference in approach is academic, since, when offered a choice, over 90 per cent of clients pick the mixed fund, thereby leaving at investment decisions to the life company. But there can be variations on this theme.

Legal and General only operate a mixed fund, consisting of equities and fixed interest invest-ments. The property fund is completely separate. So clients have to discuss strategy regularly with the company, even if each time they give L and G full discretion.

other life companies, does not equities, property, and fixed interest. But handling the strategy of pension scheme investments is a different situaoperate a mixed fund. It runs an equity, a property and a fixed interest fund and advises clients individually on the required proportions to be invested in each fund. But most other life companies have a straight-forward inlied fund, consisting of equities, property and fixed interest.

Most life companies take defensive attitude marketing these managed funds, making them available to existing clients seeking a change from insured L and G, have adopted a more aggressive attitude, offering these funds as providing investment services to pension schemes, thereby challenging the role of merchant banks and stockbrokers.

In particular, managed funds offer a direct property-investment vehicle to pension schemes —the property fund of L and G at £418m is the largest of such funds available to

schemes. The Pru has switched to an aggressive stance over the past two years and has achieved considerable success attracting a lot of new clients. The start of the new state pension scheme last April has given pension scheme investment a tremen-

handled solely by the experts. and consider that the laymar

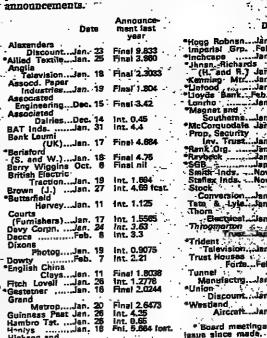
The life companies will, and often do, discuss with clients their investment aims and philosophy. But the client cannot change those views, if he

Other life companies feel that

The Pru, in contrast to all

dous hoost and continued steady growth in the provision of managed funds is anticipated.

The dates when some of the more important company dividend The dates when some of the more important company dividend statements may be expected in the next few weeks are given in the following table. Dates shown are those of last year's amountements, except where the forthcoming board meetings (indicated thus") have been officially published. It should be emphasised that the dividends to be declared will not necessarily be at the amounts or rates per cent shown in the column headed "Announcement last year." Preliminary profit figures usually accompany final dividence. Preliminary profit figures usually accompany final dividend



Welch...Jan. 12 Final 5.7466

A.B.N. Bank

Allied Irish Banks Ltd. 124%

. Date ment last

Magnet and Southerns ...len. 17 Int. 2.5 McCorquedate Jan. 10 Final 9.74 Prop. Security Inv. Curst. Jan. 17 Int. 0.75 Renk Org. Jan. 24 Final 5.849 Raybeck Jan. 18 Int. 0.128 Smith Inds ... Nov. 8 Final 4.260 Smith Inds ... Nov. 9 Int. nil

Tunnel Manufactro Jan. 13 Finel 2.293

Board meetings intimeted. † Right issue since made. † Tax free. § Scri issue since made from reserves.

BASE LENDING RATES W Hambros Bank

C. Hoare & Co. Julian S. Hodge Amro Bank 121% American Express Bk. 121% Julian S. Hooge Branghai 127% Hongkong & Shanghai 127% Industrial Bk. of Scot. 121% Keyser Ullmann Knowsley & Co. Ltd... Lloyds Bank Associates Cap. Corp.... 121% Banco de Bilbao 121% Bank of Credit & Crace. 1219 London Mercantile Bank of Cyprus 121 Bank of N.S.W. 121 Edward Manson & Co. 434 Banque Belge Ltd. ... Banque du Rhone et de ■ Samuel Moutagu..... Morgan Grenfell....... 121% National Westminster 121% la Tamise S.A. 13 Barclays Bank 121 Morgan Grenfell. Barnett Christie Ltd.... 13 Norwich General Trust 121 Bremar Holdings Ltd. 1349 Brit. Bank of Mid. East 1249 P. S. Retson & Co.... Rossminster Rossminster Royal Bk. Canada Trust 12 Brown Shipley 1218 Canada Perm't Trust 1218 Cayzer Ltd 1218 Schlesinger Limited ... ecurity Trust Co. Ltd. 18 Trade Dev. Bank 121 Trustee Savings Bank 124 Twentieth Century Bk. 135 Consolidated Credits... 12 Co-operative Bank*121 Corinthian Securities 121 United Bank of Kuwait 1249 United Bank of Whitesway Laidlaw 15 %. Credit Lyonnais 1219 Duncan Lawrie 1219 Williams & Glyn's Yorkshire Bank Duncan Lawrie 121 The Cyprus Popular Bk. 121 Members of the Accepting House 7-day deposits 10%, 34 deposits 10%% First Nat. Fin. Corp. ... 14 First Nat. Secs. Ltd. ... 14

aceposits in sums of £16.00 and under 10%, up to £25.00 10% and over £5.000 10% and over £1.000 10% Demand deposits over £1.000 10% Greyhound Guaranty... 12) 9 Grindlays Bank 1219 J Guinness Mahon 121%

investment

Hawthorn Leslie more than doubles Anglo Swiss stake

NOTICE IS MEREBY GIVEN that the Ordinary Share Transfer Books will be closed from 5 s.m. on Friday, 18th January, 1978 and will re-coen again on Wednesday, 24th January, 1978. By Order of the Board, A. H. BIRCHALL, Secretary, St. George's Down, Buckwater. Leslie may yet emerge as a major shareholder even mount a rival bid for Anglo Swiss Holdings for which Armstrong Equipment has agreed to pay

Armstrong's bid is worth 54p a share but last week Hawthorn Leslie, which is also thought to have had designs on the loss making industrial fasteners concern, was buying Anglo shares GARGOYLE, 59, Deen Street, London, W.I.
NEW STRIPTEASE FLOORSHOW
"AS YOU LIKE IT and 1 am.
Mon.-Fri, Closed Staturdays, 51-437 8485. at 59p apiece.

As a result it has more than doubled its stake in Anglo to 10.1 per cent. Armstrong's terms emerged on January 1 after Anglo's sbare price had been suspended at 29p at the company's request.

But there is some confusion as to whether the suspension request was as a result of an

or Armstrong.
Armstrong's chairman, Mr. Harry Hooper, says that under his banner he would expect Anglo to be making profits by the end of 1979. In the three years to December 31, 1977, the

group had made pre-tax losses totalling 400,000.

Armstrong has already agreed to buy a 44 per cent stake in Anglo—from the Anglo directors and other shareholders. It now remains to be seen how far Hawthorn Lesile will

proceed in its buying of Anglo

ROYAL TRUST CANADA Royal Trust Company of Canada, the UK subsidiary of Royal Trust Company, Montreal, has formed a new wholly-owned insurance broking subsidiary Roytrust Insurance Services. LADBROKE OFFER

Canada's largest trust company

UNCONDITIONAL

Acceptances of the recommended offers on behalf of the Ladbroke Group for the whole of Myddieton Hotels not already owned, have been received from over 81 per cent of the holders of Myddleton ordinary.

Tuking into account the ordinary shares already owned by a Ladbroke subsidiary and the ordinary shares acquired by Ladhroke under the terms of the offer, Ladbroke now owns over 91 per cent of the ordinary

The share and cash election under the terms of ordinary offer has now closed and the preference offer has been extended until 3 pm on Friday, January 12.

The ordinary offer has been

declared unconditional and wil remain open for acceptance until further notice,
The Stock Exchange has admit-

ted the 699716 new Lachroke shares to be issued pursuant to the ordinary offer and the warrant scheme-dealines in the new Ladbroke shares are expected to commence today.

SHARE STAKES

Johnson Matthey - Johannes-burg Consolidated Investment holds 3,907,700 shares, Prudential Assurance 855,227, and Anglo American Corporation of South Africa 851,000 each over per cent. Charterhouse Groun-Mr. G. C

Rowlett, director, has exercised options on 30,000 ordinary shares at 32,16660 per share. He has sold 27,500 and retained 2,500 Bernard Wardle—Birmingham and Midland Counties Trust has acquired further 60.000 shares, making holding 3,063,000 (17.09

Braid Groun—Pearl Assurance has bought 60,000 shares increas-ing holding to 310,000 (517 per cent).

John Foster and Son—Com-mercial Union Assurance now holds 496,398 ordinary shares (7.64 per cent.).
Levex—Further to the announ-

coments printed on Decomber 19 and 23—now stated that Mr. K. V. Maharayah sold 50,000 shares at 16p on December 19. His holding is now 144,000 shares (2 per cent.),

WORLDWIDE FUND LIMITED

A commodity futures trading

Net Asset Value per \$1 share as at 29th Dec. 1978 \$11.61

LOCAL AUTHORITY BOND TABLE

| Authority (telephone number in | Annual gross | рау- | Minimum | |
|-----------------------------------|-----------------|----------|----------|-------|
| parentheses) | mietear | <u> </u> | sum | DOME |
| | % - | . • | . | Year |
| Parnsley Metro. (0326 203232) | 12 | i-year | 250 | 37 |
| Barking (01-592 4500) | 117 | }-year | 1,000 | - 48 |
| Barking (01-592 4500) | 121 | -year | 5.000 | 4-8 |
| East Lindsey | 124 | -year | 2,000 | 3-10 |
| Knowsley (051 548 6555) | 121 | -year | 1,000 | 6-10 |
| Manchester (061 236 3377) | 12 : | l year | 500 | - 5 |
| Poole (02013 5151) | 113 . | -year | 500 | 2.3 |
| Poole (02013 5151) | 12 <u>1</u> | i-year | 500 | 5 |
| Poole (02013 5151) | | уеат | 500 | 67 |
| Redbridge (01-478 3020) | 12 | i-year | 200 | 4.5. |
| Sefton (051 922 4040) | 12 | -year | 2.000 | 3-7 |
| Wrehin (0952 505061) | 124 | yearly | | 5.10. |



11.085 11.116 11.169 11,183

Deposits of \$1,000-£25,000 accepted for fixed terms of 3-10-2 years. Interest paid gross, half-yearly. Rates for deposits received not later than 12.1.79. Terms (years) 3 4 5 6 7 . 8 . 9 Interest % 121 121 121 121 121 121 121 121 121 Rates for larger amounts on request. Deposits to and further information from The Chief Cashier, Finance for Instituted, 3! Waterloo Road, London SE1 SKP (01-928 7822, Ett. 177). Checues payable to "Bank of England, a/c, FFL FFI is the holding company for ICFC and FGI.

FINANCE FOR INDUSTRY TERM DEPOSITS

66 Capital expenditure on plant and machinery is now reflecting improved performance and we confidently expect this trend to continue 99 R. J. H. Parkes, Chairman

Other salient points from the Chairman's Statement

Export sales have shown a considerable advance and we shall continue to give high . priority to this area of our

 Selling prices and margins continue to be under pressure and although profit at £3.5m is well in advance of last year it is below our target.

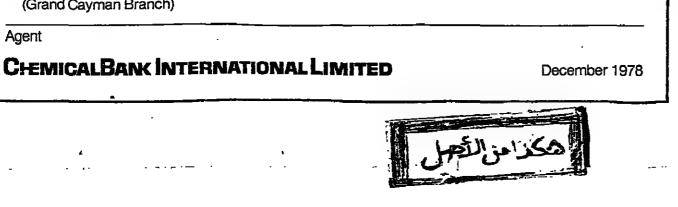
activity.

€ £2.4m was invested during the year on plant, machinery and buildings. Expenditure in the year shead will exceed £3.5m. Our financial resources are adequate to meet this programme.

Our outstanding order book is satisfactory. and of a better quality. Barring outside influences we expect to make further progress in the year allead.

Results to 30th Sept. 1978 1977 £69m up from Sales Profit before tax £3.5m up from £2.6m Profit after tax £2.6m up from £2.5m Dividend per share 4.9463p up from 3.6236p Earnings per share 15.11p up from 14.72p





Continental Illinois Limited

Chemical Bank

Crédit Lyonnais

Crocker National Bank

..... 1,75.7 1.8 6.4 12.7

197B:79

High Low

RECENT ISSUES

EQUITIES

FIXED INTEREST STOCKS

"RIGHTS" OFFERS

\$184m offer NATIONAL AIRLINES for Mission Insurance

AMERICAN International, a major U.S. insurance group, has bid \$184m in cash and shares for the capital of Mission in-surance, a company heavily in-volved in the workmen's compensation and of the insurance market and whose operations

market and whose operations are largely concentrated in the state of California.

Mission had no immediate comment to make on the hid other than that it would call a special meeting of its Board to consider the proposal that Al offer \$40 a share for the 92.6 per cent of Mission not already powed. The Al offer is in cash owned. The Al offer is in cash for 42 per cent of Mission plus an equivalent value in shares for the balance.

Mission underwriters commercial property casualty lines, and workmen's compensation busi-ness accounts for some two-thirds of premium income.

Al said the proposal was conditioned upon approval of a definitive merger agreement by the Mission and on Mission not entering into an agreement to sell 606,000 of its shares (about 13.2 per cent) to American Financial Corporation nor entering into a general agency agreement.

General Cinema withdraws bid for Columbia

By David Lascelles in New York GENERAL CINEMA has withdrawn its bid for about 20 per cent of Commbia Pictures after rejection of its offer by Columbia's board. The way thus seems clear for Mr. Kirk Kerkorian, the owner of MGM, to proceed with his offer for an identical stake at \$24 per share. General Cinema-last week said it would offer "in excess of \$24" provided a friendly agreement could be reached. Columbia said it rejected General Cinema's again in 1978 and the current offer because if would create year will also be "difficult." "legal, business, economic and This is partly due to the hish guaranteed a loan of US\$20m operational problems," start-up costs of the new made by the bank to Mr. Sada-

CAB ruling on takeover is facing delay

A GOVERNMENT decision on the merger battle being waged over National Airlines will Eastern Airlines for the Miamibased carrier. Last month's intervention by

Eastern came in the midde of to open separate hearings on the Civil Aeronautics Board hearings on the rival applications for control of National mate of a final decision is now which National directly competes. A combination with holders' meeting is expected within the next month and the World Airways. The administrative law judge conducting the hearing was siming to produce a recommendation for the

SHELL NEDERLAND reports

an improvement in refinery activities in Holland for the final

quarter of 1978 though there

cala division. :

vas little change in the chemi-

The company made a profit on

its refinery operations in the past three months of the year

due to the reasonable price level

it achieved for its products and

an improvement in efficiency, the management told the works

Shell estimates that it dis-

tilled 17 m to 18m tonnes of

crude oil in the year as a whole,

representing almost 70 per cent

use of capacity. -It is difficult to forecast whether this im-

provement will be continued in

the current year, it said. The company's operating result may

be affected by the sharp price rise announced by the OPEC countries and by the possible affect of this on the U.S. dollar.

Shell expects its: chemical

plant at Pernis and Moerdijk

near Rotterdam to make a loss

judge will be appointed shortly

INTERNATIONAL COMPANIES and FINANCE

vehement statements to the con-trary by the airline's chairman, Board by February 1 and a final Mr. Frank Borman, have per-CAB decision had been set for suaded many observers that the former astronant is not only

Recovery at Shell Nederland

styrene/propane oxide plant. • Foods group Koninklijke Shell expects to make another Wessanen expects 1978 net

loss on its refinery and chemical, profits to show an increase from

operations in 1978 after the loss the Fisle.6m achieved in 1977. of about FI 300m (\$150m) in At the same time, net profit per

1977. Shell Nederland's sales share is not expected to have

of nearly F1 13bn (\$5bn) in fallen from the Fis11.01 of 1977.

1977 accounted for just under despite an increase in capital 10 per cent of total turnover of the Royal Dutch Shell group. despite an increase in capital according to executive board the Royal Dutch Shell group.

Writ by Moscow Narodny

MOSCOW NARODNY Bank, the nobu Ogawa or else was himself

Russian-owned bank registered the principal debtor. The

in London, has issued a \$20m guarantee was allegedly made writ in Hong Kong against Mr. in May 1977. On October 6, 1978

Chus Kung Siew, a local busi-nessman. MNB demanded repayment of the debt which had risen, by that

next day.

However, this timetable, anxious to control National but almost certainly forced a post- per cent ownership of National unusually speedy for the CAB also believes he has a reason-since the TXIA and Pan Am able chance of government almost certainly be delayed by applications were made late last approval. Outside of Eastern the supprise \$425m bid by summer and early autumn is his view appears to be a minsummer and early autumn, is his view appears to be a minnow in ruins. Following the ority one because of the anti-ment recommending acceptance Eastern proposal another law competitive impact of such a of Pan Am's \$41 a share offer,

> Eastern's \$50 a share proposal. National is widely seen as contrary to the intentions of the vebement statements in the Airline Deregulation Bill in November designed to spur greater competition among U.S.

> > time, to US\$22.7m. Neither Mr.

Since then, three companies believed to be connected with

Mr. Chua have sued for an in-

junction against MNB to re-

strain the bank from winding

Jan. 5 Jan. 4

which had never aimed for 100 tional operations.

ponement of the meeting of National shareholders scheduled for January 15. National had been preparing a proxy statesubject to government approval.

within the next month and the National board may well urge shareholders to accept highest offer from the airline wins government

stock, has not so far announced a formal proposal. Its aim of control majority. opposed by National but it has purchased 24 per cent of National's shares in the open market at an average price of

\$28 per share. Pan Am has bought 22 per cent in the open market and is stressing that its plans would be most fair to National's shareholders, the least anti-competitive in terms of its impact on the U.S. airline industry and most beneficial for Pan Am which claims it needs domestic route structure to complement IXIA, a small regional airline and support its mainly interna-

Lay-offs at American **Motors and Chrysler**

BY OUR NEW YORK STAFF

workers will be laid off this week by the industry's two troubled manufacturers. American Motors and Chrysler Corporation, both of which are struggling against weak demand.

American Motors' problem appears the more critical with car sales in December falling by 29 per cent and dealers sitting on enough stocks to last a full five months at current selling rates.

The company's operations are being sustained by the success of its Jeep utility vehicles, and its passenger car difficulties attach even more importance to veloped a large lending business of one of the far East in the early, funds at all according to MNB Renault. France 1970s. This latest writ follows and MNB issued the writ the auto company. its prospective agreement with Renault. France's state-owned

The two have been negotiating since last spring on an agreement which will lead to the marketing of Renault's R5 small car through AMC dealers and production of the R18 saloon at AMC's Kenosha, Wisconsin, assembly plant. Talks have progressed much more slowly than anticipated at the time of the original agreement in principle but a final resolution is now thought to be imminent,

Kenosha several times last year because of a glut of passenger cars and this week about 6.500 workers were being laid off upri next Monday.

Michigan assembly plant for two weeks, laying off 6,800 workers Another two plants at St. Louis and Newark! Delaware, are to be closed later this month so as to adjust inventories which remain high despite a modest 8.3 per cent sales increase in According to several analysts

this achievement is disappointing because Chrysler's December 1977 sales were exceptionally low. The company's 11.6 per cent market share last month compared to a 12.4 per cent average for 1978 is a better guide to its current marketing problems. Chrysler's total car sales in 1978 were 7.2 per cent down on 1977.

Hard pressed financially, Chrysler has been forced into a fresh economy measure involving scrapping plans to build a trons oxle manufacturing plant at Richmond, Indiana. Instead, the company will expand its Kokomo Indiana transmission plant following "continuing cost studies which showed it would be cheaper" than building a new unit.

Chrysler caused something o a stir last month when it admitted that it had applied for AMC was forced to close \$25i)m of Government loan guarcritees to build the plant. Chrysler's prospects of securing the guarantees were thought to be unlikely but the company cloums that this uncertainty was not a factor in its decision.

MORE THAN 13,000 U.S. car ting down its Hamtramck (sic)

| F.P. | 15/12|12/1 | 122 | 107 Clifford Chas, | ... |
| F.P. | 15/12|12/1 | 118 | 101 Dixon (D.) ... |
| F.P. | 15/12|12/1 | 118 | 101 Dixon (D.) ... |
| F.P. | 15/12|12/1 | 147 | 140 Hoskins & Horton |
| F.P. | 15/12|12/1 | 161 | 150 M. L. Holdings |
| F.P. | 15/12|12/1 | 161 | 150 M. L. Holdings |
| F.P. | 15/12|12/1 | 161 | 150 M. L. Holdings |
| F.P. | 15/12|12/1 | 150 | 15pm Milbury |
| F.P. | 15/12|15/1 | 230 | 210 | 250thert & Prit |
| Mil | --- | 7/12pm 4/2pm Suter Electrical De |
| F.P. | 18/12|15/1 | 75 | 67 Tern Consulate |
| Nil | 10/1 | 9/2 | Bpm | 6pm York Fine Woollen | Renunciation date usually last day for dealing free of stamp duty. D Figures based on prospectus estimate, g Assumed dividend and yield, 8 Forecast dividend; cover based on pravious year's earnings. F Drudend and yield based on prospectus or bother official estimates for 1879, 9 Gross. T Figures assumed. Cover allows for conversion of shares not now ranking for dividend or ranking only for restricted dividends. § Placing prica to public, 19 Pence unless otherwise indicated. I Issued by tender, 1º Official to holders of ordinary shares as a "rights." • Issued by way or capitalization, §§ Reintroduced. If issued in connection with reorganisation, more or take-over. [ii] Introduction. [] Issued to former preference holders. [] Allotment letters (or fully-paid). • Provisional or parity-paid allotment letters + With warrants

1.G. Index Limited 01-351 3466. 8 Lamont Road, Loudon SW10 0HS. July/Sept. Rubber 59.2-59.8 Tax-free trading on commodity futures.

The commodity futures market for the smaller investor.

ALLEN HARVEY & ROSS INVESTMENT MANAGEMENT LTD. 45 Cornhill, London EC3V 3PB. Tel: 01.623 6314.
Index Guide as al January 4, 1879
Capital Fixed Interest Portfolio 100.22
Income Fixed Interest Portfolio 100.52

CLIVE INVESTMENTS LIMITED Royal Exchange Ave., London ECSV 3LU, Tel.: 01-288 1101 Index Guide as at December 19, 1978 (Base 100 on 14.1.77) Clive Fixed Interest Capital 129.92 Clive Fixed Interest Income

Public Works Loan Board rates

Effective from January 6

Over 5, up to 10 ... Over 10, up to 15 ... Over 15, up to 25 ...

* Non-quota loans B are 1 per cent higher in each case than non-quota loans A. * Equal instalments of principal. * Repayment by half-yearly annuity (fixed equal half-yearly payments to include principal and interest). (With half-yearly payments of interest only.

CURRENCIES, MONEY and GOLD

Nervous interest rates

BY COLIN METHWW

and although the U.S. currency trading was thin, but the market required substantial support remained alive with rumours confrom central banks when the new cerning a possible rise in the year opened, it was trading fairly U.S. prims lending rates in the ateadily by the end of the week.

New York interest trading day rate. By the end of the week of this year, with Federal funds the discount rate was still 91 per touching 12 per cent. The Federal and prime rates remained are Reserve then interest subsharply on the first trading day of this year, with Federal funds touching 12 per cent. The Fed-eral Reserve then injected sub-stantial funds to the banking sys-

| CURRENC | Y RA | E5 . |
|--|--------------------------------|--------------------------------|
| January 5 | Drawing | Link of Account |
| Sterling U.S. doller Canadian doller | 0.641768 1.29973 1.53479 | 0.574057 1.38006 1.61187 |
| Austrian schilling Belgian franc | 6.62118 | 18.3869 39.5779 6.96013 |
| Guilder French franc | 2.35984 2.57850 5.46798 | 5.75783 |
| Yen Norwegien krone | | 266,563 6.86044 98,2995 |
| Swedigh krone Swise Imag | 3.83513 2.12824 | 5.89220 2.23629 |

| January 5, | Drawing Fights | Linit of Account |
|------------------------------|-----------------------|----------------------------|
| Starling | 0.641768 | 0.574057 |
| U.S. doller | 1.29573 | 1.51181 |
| Austrian schilling | 17.5025 | 18.3869 |
| Belgian franc | 5.62118 | 39. <i>5779</i> 6.96013 |
| Doutsche, Mark | 2.38984 | 2.51544 |
| Guilder Franch trans | 6-26798 | 5.75783 |
| Yan Norwegian krone | 1089.64 | 1135.31 |
| Norwegian kropa | 255.128 R.51882 | 6.96044 |
| Pageto | 90 PATHE - | GD 7005 |
| Swedigh krone Swise igano | 2.12624 | 5.89220 2.23629 |
| | *. [#. [*]] | 13. |
| | Sec. 10. | |

| January & Co. | Speciel. | Finit of |
|-----------------------------|---------------------|----------|
| January 5 | | Account |
| Starling | 0.641768 | |
| U.S. doller | 1,29573 | |
| Canadian dollar : | | 1.61187 |
| Austrian schilling | 17.508.5 37.660# | 39.5779 |
| | 6.B2118 | |
| Douteche, Mark | 2.38984 | |
| Guilder | 2.57850 - | |
| Franch franc | 5.46798 | 5.75783 |
| Ver | 255 126 | 286 583 |
| Yan Norwegian krone | 8.51882 | 6.86044 |
| Peseta | 90.847 55 - | SR 2935 |
| Swedigh krone Swise imag | 5.63573 | 5.89220 |
| manage in part | | |
| | | |
| The second second second | حند نده | |

Interest rates moved rather tem, and by Wednesday Fed of their financial years. A major nervously in the world's major funds were back around 10 per house completes its financial year financial centres last week cent which was presumed to be just before the Easter period, domestically Foreign exchange dealers were the target rate of the authoriand by holding bills which will not mature until the next financial year. ments over the next few months, ... On Thursday foreign exchange cial year can

at 111 per cent.

A rise to at least 12 per cent in prime rates is still expected however, and a lift in the disno surprise. In these conditions no one was predicting the future trend in London interest rates. The UK Treasury bill tender on Friday was largely technical, with the issue of 95 day bills taking the maturity date beyond the Easter holiday, instead of the usual issue at 91-day bills.

It was also a rather compli-cated tender since some discount nouses were more interested in the bills than others, because o situation regarding the end

Moscow Narodny rapidly de-

many others issued by or against

number of loan foreclosures in

According to MNB's state-

ment of claim, Mr. Chua either

recent years.

bank following a large

Was a strauge ously not too even at an ir

OTHER MARKETS

| Asia Mar Contract I amount | | (2111.717) | LE1 10. |
|----------------------------|-------------------|-----------------|---------|
| tes its financial year | Gold Coins. | | |
| the Easter period, | domestically | | |
| ing bills which will | Krugerrand | E25 528 | \$2364 |
| | Kinaatiang | d:1174-11841 | 0117 |
| entil the next finan- | New Sovereigns | (T. 11.3-1 109) | |
| defer the parment | Mem 20Asteldue" | | +64-6 |
| deter me batment | | (257-56) | (C3) |
| | Old Sovereigns | S604-664 | .563.6 |
| | | : £5 [4-824) | LEST! |
| ge rate of discount | Gold Coins, | | |
| however, and so did | Internationally | | |
| | * Krugerrand | S\$2501-2521 | 9238- |
| accepted bid. This | , | (ECT4;-1151) | |
| e situation, but alto- | New Sovereigns | 559.R1 | S66. |
| s rather a complex | Non Covereigner | 1/4291-3011 | 299.1 |
| | Old Sovereigns | | 563-8 |
| houses were obvi- | Our coats sidism' | (£\$13-523) | 1231 |
| willing to take bills. | con bester | £295-298 | \$294 |
| | 520 Eagles | | |
| ncreased rate of in- | \$10 Eagles | 2 1491-14H | £362 · |
| | \$1 Eagles | S ADS- 133 | \$ 788. |
| | | | |
| | | | |

THE DOLLAR SPOT AND FORWARD

| | Day's | | | % | | 22 |
|----------|---------------|---------------|-------------------|-------|-------------------|--------|
| Jan. 6 | Spread | Close | One month | p.a. | Three months | p.a. |
| | 84.25-84.38 | 84.26-84.29 | 0.08-0.11e pm | 1.31 | 0.14-0.17c pm | 0.7 |
| Nethind. | 1.9890-1.9995 | 1.9970-1.9990 | 0.32-0,27e pm | 2.18 | 1.19-1.14c pm | 2:56 |
| | 29.02-29.21 | 29.10-29.13 | 7-61-c pm | 2.52 | 21-19c pm | 2.64 |
| Denmark | 5.1100-5.1445 | 5,1300-5,1325 | 0.80-1.30 ore dis | -2.82 | 2.90-3.40ore dis | -2.Æ |
| W. Ger. | | 1.8498-1.8508 | 1.44-1.34pf pm | 8.74 | 3.82-3.72pf pm | 8,15 |
| Portugal | 48.60-45.25 | 46.60-46.80 | 30-40c dis | -3.90 | 70-140c dis | -8.99 |
| Spein | 70.11-70.38 | 70.14-70.19 | 18-38c dis | -4.54 | 105-135c dis | -6.84 |
| Italy | 833.00-836.5U | 833.50-834.05 | 1,20-1.70fire die | -2.29 | 3.75-4.50thre dia | -2.21 |
| Norway | 5,0265-5.0610 | | | 0.69 | par-0.40c pm | 0.47 |
| Prince | 4.2125-4.2460 | | | 2.12 | 2.80-2.60c pm | 2,50 |
| Sweden ' | | | 1.40-1.20ore pm | | 3.55-3.35ore pm | 3.18 |
| Japan | 195.25-196,80 | 186.55-196.75 | 2.00-1.85y pm | 11.36 | 5.45-5.30y pm | 10,93 |
| Austria | 13.48}-13.57} | 13.55]-13.57} | 6.75-5.75gro pm | 5.35 | 18.50-16.00gro p | m 5.08 |
| Switz | 1.6422-1.6525 | 1.6450-1.6480 | 1.70-1.65c pm | 11.77 | 4.73-4.68c pm | 31,44 |
| 7- | | _ † U.S. ce | ets per Canadian | -\$- | • | |

FORWARD AGAINST £

| 7 232 | | 7 | | | | |
|-----------|--|--|--|--|--|---|
| Jen, 5 | He k rate | | Ciose | One month | %p.a. | mo |
| Canadian# | 174 84 8 8 8 8 8 8 8 8 8 8 8 | 141.58-142.00 1;880-1,890 10.15-19.23 8.51-8.67 6.73-8.77 592-402 | 2.58 (0-2.5950 4.05-4.04 58.75-58.85 18.55; 18.56; 3.76;-3.74; 84.18-94.50 141.65-147.60 | 59-23 př. pra. 50-198 c. dis 50-198 c. dis | 2.90 8 2.45 6 -2.03 5 9.83 9 -9.54 1 -6.50 2 -1.78 6 1.18 2 3.18 8 4.11 1 | . 18. 1. 13. 23. 15. 46 c 15. 46 c 15. 83. 120. 28. 100. 30. 10. 80. 1. 88. 1 1. 88. 1 |

Note Rates 253-2734 594-504 10.28-10.38 8.48-8.58 1.70.1.80 1,550-1,700 397-402 3.98-4.08 10.15-10.25 3.035-2.055 | 1007-1.017 Austria 1.7612-1.7662 0.8740-0.8750 Belgium 41.61-42.61 | 20.60-21_10 | Denmar 98-98 1444-1484 3.80-3.40

EXCHANGE CROSS RATES

| Jan. 5 | PoundStarling | U.S. Dollar | Deutschem'k | Japan'se Yen | FrenchFrenc | Swiss Franc | Datch Guild'r | Halien Line | Canada Dollar | Belgian Franc |
|-------------------------------------|---------------|------------------|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Pound Starling U.S. Dollar | 0.495 | 2,020 | - 3.738 - 1.850 | 597.3 196.7 | 6.555 4.234 | 3.330 1.649 | 4.055 1.999 | 1685. 834.0 | 2.392 1.184 | 58.80 29.11 |
| Deutsche mark | 0.268 | 0.540 | 1. | 106.3 | 2.288 | 0.891 | 1.090 | 450.8 | 0.640 | 15.73 |
| Japanese Yen 1898 - | 2.517 | 5.085 | 9.408 | 1000. | - 21.53 | 9.385 | 10.16 | 4241. | 6.021 | 148.0 |
| French Franc 19 | 1.169 | 2.552 | 4.570 | 464.5 | 10. | 3.994 | 4.719 | 1970. | 2.797 | 68.75 |
| Swiss Franc | 0.300 | - 0.607 | 1.122 | 119.3 | 2.568 | 1. | 1.912 | 505.9 | 0.718 | 17.66 |
| Dutch Guilder Italian Lira 1,008 | 0.248 | - 0.501 1.199 | 0.926 | 98.45 235.8 | 3,120 5.076 | 0.835 1.977 | 2.395 | 417.5 1000. | 0.59ã 1.420 | 14.57 34.90 |
| Canadian Dollar | 0.418 | 0.844 | 1.563 | 156.1 | 3.575 | 1.392 | 1.687 | 704.3 | 1. | 24.58 |
| Belgian Franc 100 | 1.701 | 5.435 | 6.356 | 675.6 | 14.55 | 5.663 | 6.862 | 2865. | 4.068 | 100. |

LONDON MONEY RATES

| Sterling Local L | | | | | | | | _ | | | |
|--|--|--|--|---|---|--|--|--|-------------|-----------|--------------|
| Overnight 114-115 115-1178 125-1258 125 | Jan. 5 1979 | Certificate | Interbank | Authority. | negotiable | House | Company | market : | Treasury | Benk | Trade |
| One year 123-121; 1218-1214 12-1258 1258 | 2 days notice. 7 days or 7 days notice. One month Two months Three months Six months Nine months | 11;; 11;; 12;; 121; 12;; 123; 12;; 123; 12;; 12;; 18;; 18;; | 114-113 114 125 124-136 1219-125 1219-125 124-123 | 111g-115g 115g-117g 117g-12 121g-125g 121g-123g | 125g-125g 125g-125g 121g-125g 12-125g 12-125g 121g-125g 12-125g | 121 ₈ 121 ₄ 125 ₈ 127 ₈ 127 ₈ | 111 ₀ 123 ₈ 187 ₈ | 103 ₄ -11 113 ₄ 113 ₄ -117 ₈ | 1114 114 | 12 - 12 p | 125q 124g |

MONEY RATES

| Ine rade ills ‡ | NEW YORK Prime Rates | 10 |
|--------------------------|---|---------------------------------|
| | Dispount Rate Overnight One month Three mooths Sig months | 3 2 3 3 3 3 3 |
| hority cent. four- | FRANCE Discount Rate One month Overnight | 9.5 6.5 6.7 |

| YORK | • |
|----------|-----------------------------|
| Retes | 11.75 10 9.34 9.40 |
| MANY . | |
| unt Rate | 255 3.50 3.70 |
| NCE | |
| ent Rate | 6.5625 6.75 |

Making the right decisions in business and personal investment is simple: you have to stay on your toes, and keep an ear to the ground.

The man most likely to succeed in '79

Simple-but not easy. In fact, in the unpredictable economic climate of the seventies, making the right decisions often looks virtually impossible.

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of success in '79.

Again, it looks as though we are: we now have more readers earning £10,000 p.a., and more readers who are directors than any other weekly business magazine. And again, the trend is up.

If people like that find us indispensable, mightn't you? The Investors Chronicle: in your newsagents, every Friday. Pick up a copy-improve your chances

The financial weekly that really means business.

6,03 6.00 6,02 5,54

Keeping up with cost Managing director of bricks and mortar of GEC-Fairchild

The total estimate of direct fire damage was £261m. Fire

the number of fires started by

arsonists, the argument is strong

for much greater vigilance and

security on the part of policy-holders, insurers and politicians.

1979 week

+ 10.0 - 26 0 - 6.0

TEL AVIV

Bank Leumi le Israel IDB Bankholding , .

Bank Happalim Br.,

Gan. Mort. Bk. Br.

"Claf" israel invest

Source Bank Leum: le-Israel, BM,

Arson bill

BY OUR INSURANCE CORRESPONDENT

FIVE YEARS ago the Royal Prevention (No. 128) covers institution of Chartered Surfires in 1977 and those which veyors began to monitor regularly the movement of house of damage each.

The total estimate of direct its Ruilding Cast Information for damage was £251m. Fire its Building Cost Information for damage was £261m. Fire damage was £261m. Fire damage was £261m. Fire damage was £261m fire damage was £261m. Fire monthly and its reports are carried in the magazine Building.

Last week Building reported fire so-called large fires, and of this, £40m occurred in 18 fires costing that the cost of house building more than £1m each. had doubled in the last five

This latest analysis shows that the greatest movement was during the years 1974 and 1975 and maliciously or intentionally, at that in the last two years the increase in building each has to talled about 21 per cent over the December, 1976, level, with last year's percentage mar-ginally under 10 per cent. some of these, it is probable

inally under 10 per cent. some of these, it is probable
It is reasonable to assume that between 25 per cent and 30 from this that in the same five-year period the cost of build-damage bill stems from arson. ing shops, offices, factories and In this context last year's other commercial premises has direct fire damage bill-likely at least doubled. to he about £320m-probably means that the cost of arson

Ammunition

Such independent information provides ammunition for insurers to fire at policy-holders who neglect to revise sums insured. No one, whether a domestic or a commercial policyholder, can argue that he is not substantially under-insured if he has not made any revision in the last two years—more so it he has failed to do so over a longer period. The information justifies household insurers' wide-spread introduction of index linking and refutes complaints about inertia selling.

The institution does not Union Sk. intagi Br. expect the movement of the United Mizrah Bank Hasanah Ingur Br. index to stay below 10 per cent this year. Building workers' wages will be settled in June, but already heating and ventil- Land Development Africa Israel Invest. 1,007 lating workers and plumbers Israel Land Dev. Br. Property & Building have received about 16 per cent, and electricians have asked for a basic 43 per cent increase. Public Utility
Last year, despite continuing israel Electric Corp.
pay restraint, labour costs rose investment Companies by 13.4 per cent.

The institution reckons that building labour costs may increase by only 12 per cent in Allance Tyre & Rbr. 1,325 1979, but insurers and policy- Eleo Br. holders, can surely expect con-struction costs to rise by more "Ata" Terms "S than 15 ner cont this war. than 15 per cent this year.

From the commercial fire aspect the year 1977 is now a matter of history and though the precise final cost is not yet determined some analyses have Delek hasis: the current issue of Fire Tel Aviv.

Mr. David Marriott has been appointed managing director of GEC-FAIRCHILD, the joint venture company formed between the General Electric Company and Fairchild Camera and Instrument Corporation, to manufacture semiconductors in Britain. A Fairchild vice president, Mr. Marriott, an Englishman, went to the U.S. in 1962 and has been with Fairchild since 1965.

The Secretary of State for Scotland has nominated Mr. J. Murray to be a member of the special panel of the TRANSPORT TRIBUNAL. He succeeds Professor D. F. Macdonald, who has been a member of the panel been a member of the panel

Mr. V. G. Ramsden, a joint general manager, and Mr. J. S. Gee, the company's actuary, will be appointed to the Board of the REFUGE ASSURANCE COVI-PANY as executive directors on February 1. Mr. J. Proctor-Pearson and Mr. R. F. Pennington intend to retire from the Board at the end of 1979. Mr. Proctor-Pearson has agreed to rose to £80m or £100m. If existing public and private levels of security cannot reduce remain as honorary president of the company, Mr. R. C. Green, a former investment secretary, has also retired. Following the retirements, Mr. W. N. Brewood, a joint general manager, will be appointed an executive director on January 1, 1990, retaining his existing position, and Mr. R. Stevenson, a joint general manager, who will be retiring in Technique. February 1980 will relinquish his present executive position at end of 1979 and will be appointed a non-executive director from January 1, 1980.

> Mr. J. A. Franks has been appointed a non-executive commercial direct director of CORINTHIAN products division. HOLDINGS.

Mr. Jeremy Polter becomes group director of corporate affairs for LONDON WEEKEND TELEVISION on July 1 when he joins the Boards of LWT (Holdings) and London Weekend

Mr. Morris Kleiner has become deputy managing director of BAMBERS STORES. Joining the Board are Mr. E. S. Brower, Mr. M. Y. Wettreich, Mr. L. Slapper and Mr. D. Wettreich.

Mr. R. Alastair Lloyd, director of Ellerman Lides and deputy chairman of Ellerman City Liners, has been appointed chairman of ASSOCIATED CONTAINER TRANSPORTATION (ACT) in succession to Mr. H. R. Warl and injury property directions. MacLeod, joint managing direc- EMPLOYERS for of Ben Line. ACT is made SOCIATION.

up of five shipping lines; Ben Line, Blue Star Line, The Cunard Steam-Ship Company, the Eller-man Lines and Harrison Line.

هكزامنالأعل

Admiral Sir John Treacher has accepted an invitation to join the Board of WESTLAND AIR-CRAFT. He was director of Naval Air Warfare from 1966 to 1968 and was involved in the Sea King helicopter development at that time. Among his later appointments were vice chief of Naval Staff, Commander-in-Chief Channel and NATO Allied Commander-in-Chief Channel and Eastern Atlantic. He retired from the service in 1977.

Mr. Andrew C. Salvesen has been appointed a director of CHRISTIAN SALVESEN (MAN-AGERS), the senior operating company of the Salvesen group. Mr. Peter H. Gray has been apointed a director of Christian

At MOBIL OIL COMPANY Mr. G. Broadhead has been appointed manager, lubricants supply. Mr. S. Sanden has been appointed marketing director, replacing Mr. L. Fergusson, who becomes deputy general manager, Mobil Oil Hellas, Athens.

Mr. J. E. Chilcott, formerly commercial director of the rolled products division of the BRITISH ALUMINIUM COM-PANY, bas been appointed commercial director of the BA group, in succession to Mr. D. H. K. Rugg, who has been appointed marketing director of the group. Mr. H. R. Herrington has succeeded Mr. Chilcott as commercial director of the rolled

SAVILLE TRACTORS (3 memher of the Dutton-Forshaw Group) has made Mr. John E. D. Neall managing director.

Mr. Brian D. Insch becomes general manager, commercial. of GKN Group on March 1 when he will relinquish his positions as managing director of Salisbury Transmission and a director of GKN Axies.

Mr. J. A. Franks has been appointed non-executive director of CORINTHIAN HOLDINGS.

Mr. J. Banham has been an pointed assistant general man-ager of the IRON TRADES EMPLOYERS INSURANCE AS-

Indices

NEW YORK -LOW 401-22

| | ł | · | | : Jan. | D-c | Dec. | 197 | 8.79 | Stace Co | estpliet'n | 1 |
|--------------------------------|-----------|---------------|---------|----------------|----------------|--------|-----------------|-------------------|-----------------------|--------------------|---|
| | Jan. 5 | 4 | 3 3 | .2 | 29 | 23. | High | Low | High | Law | |
| ⊕Industrials | 858.73 | 626,14 | 817,89 | 817.42 | 905,8 1 | 985,98 | 967.74 (8/9) | 742.12 (22/2) | 105 1.70 (11/1/73) | 41.22 | 2 |
| П'me B'ads. | 84,45 | 84,53 | 84.85 | 84,42 | 84,54 | 84,71 | 50.46 14'1\ | 84.85 (3)1/76) | | (A) (OE) | 7 |
| Transport | 217.57 | #17.25 | 214,55 | 210,17 | 206,56 | 296,36 | 281,48 | 199,31 | 279.88 | 12.28 (8/1/3/2) | J |
| Utilities | 701.39 | 191,98 | 100.57 | 53 , 19 | 38,24 | 30,14 | 110.96 دائق | 97.78 | 165.32 | 10.58 | - |
| Trading vol. | 28,360 |))5,400 | 29, 190 | 18,380 | 30 63A | 25,440 | - | | | | |
| | | i ! | | 1 | | , , | | | 1 1 | | Α |
| Day's high | 857.26 | low 82 | 3.29 | | - | | | ~- * · | | - 1 | 3 |

Dec. 29 | Dec. 22 | Dec. 16 | (Year ago approx

· lod-div. yield %

STANDARD AND POORS Jan. Jan. Jan. Dec. Dec. 29 High Low High Low | Industrials | 110,48 | 182,52 | 102,06 | 107,41 | 207,41 | 118,71 | 55,52 | 184,54 | 5,53 | (12/3) | (6/3) | (11/1/3) | (20/6)32 | (12/3) | (6/3) | (11/1/3) | (20/6)32 | (12/3) | (20/6)32 | (12/3) | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32 | (20/6)32

| | Jan. 3 | Dec. 27 | Dec. 20 | Year ago (approx.) |
|----------------------|--------|---------|---------|--------------------|
| ind. div. sieki 🖫 | 5.04 | 5.10 | 5.21 | 4,90 |
| Ind. P/E Bath | 8.84 | 5,74 | 8.55 | 9.13 |
| Long Goy, Bond yteld | 8,96 | 8,92 | 8.95 | 8,02 |

| M.Y.B.E. ALL COMMO |).N | | | | Kin | e and Fa | | |
|-----------------------------|----------------|---------|--------|-----------|---------|--------------|-------------|-------------------------------------|
| -itions and and | | 18-79 | | | | Jan. > | Jan. 4 | Jan. 3 |
| Jan. i Jan Jan. Jan. | | | | me. Tr | | 1,903 | 1 905 | 1,894 |
| 6 4 3 2 | Eligh | Lou | | lle | | 1,166 385 | 1231 336 | 1,352 265 |
| 65,41 65,05 64,57 55,95 | 80.59 | 48.5 | 7 00 | change | d | | 338 | 277 |
| 1 1 1 | (LL(9) | (6/3) | | e Low | M | _ | 37 19 | 21 15 |
| MONTRRAL | 1 1 | | | | | 197 | 8-79 | |
| .:. | Jan. | Jan. | Jan. | Jan. 2 | 1 | Ligh | L | ou . |
| Testustrial | | 224.71 | 222,21 | 219,18 | | (5/1/79) | | (16/2) |
| Combined | 281.45 | 230,32 | 228,27 | 225.80 | 251.45 | (6/L72) | 170.62 | (301) |
| TORONTO Composite | 1345.0 | 1338,5 | 135).2 | 1816.8 | 1845.0 | (5:1,79) | 938.2 | 30/1: |
| JOHANNESBURG | | -40.4 | | | 272.0 | .14 0 | 189.0 | 00.4 |
| Gold Indontrial | 256.9 274.7 | | 250,0° | | | (1/11) | 194.3 | |
| Jan. Pre | | | | | | L Pre- | 1976.3 | 1972 |
| 6 sion | s i High | h Lou | _ | | Б | | s High | Low |
| Australia(%) 551.87 548.7 | 5 566.7 | 9 411.1 | 9 Sp | in | (d) 95. | 50 96.0 | | |
| 70 al ml - m m 15 m 1 | (22/8 | (1/3) | 2 _ | | | _] , | 12/1/79 | $\lambda(\hat{p}(\hat{p}))_{i,j,k}$ |

Denmark(* 88.44 88.47 98.85

SPAIN V

FRIDAY'S ACTIVE STOCKS

ladicas and basa datas (all base values 100 except NYSE All Common—50; Standards and Poors—10; and Toronto 300—1,000; the last samed based on 1975). Factuading bonds, 1400 industrials, 5 400 industrials, 40 Utilidas, 40 Finance and 20 Transport, 2 Sydney All Ordinary. Balgian SE 31/12/83. ** Copenhagen SE 1/1/73.

TOKYO ¶

EUROPE

| | | <u> </u> | | ٠ |
|---------|-------------|-----------|----------|------|
| TERDAM | • | | | XĐ |
| Jan. 5 | Price + or | Div. Yld. | Jan, 5 | Pris |
| 4F1.201 | 117.1-0.5 | #18 4.8 | | Fr |
| (FI.201 | 50.5 | | Select . | 0 00 |

| ĺ | Jan. 5 | Fis. | <u> </u> | * | 3 | l |
|---|--|--------|------------|-------|-------|-----|
| | Ahold (FL20) | 117.1 | -0.5 | #18 | 4.8 | ١. |
| ļ | Akto (Fl.20) Alg'm Bk (Fl 100) | 20,3 | 8 | | | Ā |
| ì | AMEY (FL10) | | -0.5 | | | 1 8 |
| ı | Amrob'k (Fl.20) | 75.1 | -0.2 | 427 | 6.3 | C |
| ł | Bijenkorf | 86 | -1 -0.5 | 26 | 6.1 | C |
| 1 | BokaW stm(FI到; | 117.0 | -0.5 | .80 | 6.8 | E |
| ı | Buhrm' Tetter', | | -1.0 | | | E |
| į | Elsevier (F)20, | 282 | -8 | 27.5 | 2.0 | G |
| ı | Ennia N.V. B'rer EurComTsbF110 | 143.8 | +0.8 | As is | 5.2 | ä |
| ł | Gistal Br'cad P(| | 0.2 | | | Ğ |
| 1 | Heineken (FI25) | | -0.4 | | | H |
| I | | | | | | le |
| Ī | Hoog'ne (F).20),,1 HunterD.(Fl.100) | | +0.4 | | 5.3 | K |
| I | K.L.M. (FI. 100) | | +0.4 | | | L |
| ŀ | int. Muller/FI.20 | | +0.1 | | 8.6 | P |
| 1 | Nat-Ned InsFI10 | | -0.2 | 48 | 4.8 | 2 |
| ı | NedCr'dBkFL20 | 58.7 | +0.7 | 21 | 7.6 | 34 |
| Į | NedMidBk(FI.70 | 195,5m | | 22 | 5.1 | S |
| J | Oce (F1.20) | | +1.5 | 36 i | | 34 |
| l | OGEM (FL101 | | -0.1 | | | T |
| 1 | Van Ommereni Pakhoed (FI,20) | 102 | +3.5 | | | U |
| ŀ | Philips (Fl. 10), | | -0.7 | | | U |
| | RinSchVer(F) 106 | | -0.5 | -1 | 0.3 | V |
| ı | Robaco (F1,50) | 165.5 | +0.5 | 25.5 | 8.8 i | |
| ۱ | Rollinco (FL50) | 128 : | +0.4 | s i | | C |
| ĺ | Rorento (FL60) | 182.4 | -0.2 | 19.3 | 3.8 | - |
| ŀ | RoyalDutchF120 | 182.1 | +0.2 | B8.75 | 8.8 | |
| | | | | | | |

CANADA

| | | 33 | 1.2 3.9 |
|---|------------------------|------|------------|
| ı | VIENNA | | - |
| I | Jan. 5 Price +or D | | ার. ই |
| | Perimoceer 870` 9 | E 3 | 8.9 8.8 |
| Ì | Semperit | - 1: | 4.0 |
| £ | Veit Magnesit 244 +1 1 | U [4 | u l |

| | | ٠. | | | • . | |
|----------------|------------------------------------|-------|------------|---------------|------------|---|
| | HRUSSELS/LU | XĐ® | DURG | | | Ī |
| L | ٠. | | 4 | Div. | | ł |
| - | Jan. 5 | Price | + 0 | Frs. | Yid. | ١ |
| 8 | | Frs. | <u> </u> | Net | % | 1 |
| ı. | Arbed | 2.220 | ļ | - | | F |
| 5 | Sekaert "B" | | +10 | 100 | 4.5 | l |
| | Cockerili | 482 | +6 | | _ | ١ |
| 3 | EBES | | +5 | 177 455 | 7.3 6.7 | l |
| 3 | Fabrique Nat | 3.095 | + 15 | 100 | 5.5 | ŀ |
| 3 | G.B. Itino Bett | | _30 | 150 | 5.0 | l |
| 55.55.55.55.55 | GBL (BRUX L) | 1,630 | +10 | 90 | 6.5 | l |
| 1 | Hoboken | | -5G | 170 | 7.0 | ł |
| ı | Kradietbank | 7,050 | +50 | 290 | 4.1 | l |
| H | La Royale Belge Pan Holdings, | 6,150 | +100 | *325 \$2.苗 | 5.3 | Ĺ |
| | Petrofina | 3,400 | | 180 | 6.5 | ŀ |
| j | Soc Gen Banque, Soc. Gen, Beige | 3,305 | —15 —5 | 204 | 6.1 | ľ |
| | Sofina | 3,500 | +60 | 215 | 6.1 | h |
| | Solvay Traction Elect. | 2,450 | +10 | 170 | 8.6 6.2 | |
| 1 | UCB | | -10 | | _ | |
| d | Un Min. (1/10)! | 758 | + 14 | 50 | 6.8 | ĺ |
| | | | | | | |

OPENHAGEN 4

GERMANY .

| | Jan. 5 | Price Kroner | | Div. | 1 |
|---|---|---|-------------------------|--|---|
| | Andelsbanken. Danske Bank. East Askair Oo. Finansbanken. Bryggerier. For Papir. Handelsbank. G Nthn H (Kr90) Nord Kabel. Novolnd stries E Oljafabrik. | 1293, 1515, 153 325 75 125 2851, 175 | +14 -1 -19 -19 | 11 12 12 13 14 12 12 12 12 13 14 12 13 14 15 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | |
| l | Privatbank | 1503 ₄ | -4 | 12 11 | - |

Price or Div. Yid.

Agahi Glass. 559
Canon. 855
Canon. 855
Chinon. 358
Chinon. 878
Casio. 885
Chinon. 878
Casio. 885
Chinon. 878
Casio. 885
Chinon. 878
Casio. 885
Chinon. 878
ChipponPrint 878
ChipponPrint 878
ChipponPrint 878
Chippon Cassa. 865
Chippon Cassa. 874
Cassa. 87

SWITZERLAND + ...

Teijin 142
Tokyo Marine 594 - 5
Tokyo Eject Pove 1, 120 + 10
Tokyo Sanyo 586 + 4
Tokyo Corp. 150 - 1
Toyota Motor 881 Source Nikko Securities, Tokyo AGAAB (Kr. 40). 205 +3
Alfa Lavak (Kr. 50) 445 +6
ASEA (Kr. 50) 51.5 +2
ABSECON KIRS, 118 +2
Billerud 45 +2
Botors 114 +1
Cardo 171 +2
Calitricas 288 +5
Elet Tux B (Kr60 115 +5
Eres in E(Kr60 125 +5
Eres in E(Kr60 125 +5

HONG KONG

| Hong Kong 8 | Jan. 8 | Dec. 29 |
|---|-----------------|---------|
| imalgamated Rubber | Susp. | 3.10 |
| Meung Kong | 8.65 | 8.20 |
| khina Light & Power Iosmopolitian Prop | 20.40 | 11-42 |
| TOSS Harbour Tunnel | 8.70 | +8.50 |
| Asia Navigation | 4.65 | 4.65 |
| lang Seng Benk long Kong Airoraft | 166.00 81.00 | 162 00. |
| iong Kong Electric | 5.50 | 5.56 |
| g. Kg. Kowicon Wharf | 26.60 | 25 50 |
| ong Kong Land g. Kg. Shanghal Bank | 7.70 17.90 | 17.60 |
| g. Kg. Shanghai Hotel | 17.00 | 16.70 |
| g.Kg. Telephone | 26.90 | 26.70 |
| utchinson Whampes urdine Matheson | | 3 95 |
| raine Sect | 11.80 | 11,60 |
| ew.World Developmeti | 1.95 | 1.90 |
| ubber Trust | eusp. | 14.80 |
| me Darby | 7.90 | 7.45 |
| heelock Manden A | 2.625 | 2.55 |
| healock Maritime A | 15.40 | _ |

| 2.7 | | | | |
|---|---|--|--|---|
| 44 | Jan: 5 | Price | +01 | Cruz Yie |
| 1.6 2.7 1.5 3.7 1.5 5.5 1.7 2.5 4.0 | Acesita Bancodo Brazil. Banco Itau PN. Balgo Mfeira OP Lojas Amar O.P. Petrobras PP Piralii OP Solza Cruz OP Unip Pg Unip Pg ValelioDoce PP | 0.96 3.06 2.02 1.46 2.05 5.65 | + 0.05 + 0.08 + 0.08 + 0.05 + 0.05 | 0.12 14.8 0.15.0.0 0.37 22.3 0.08 0.09 0.20 6.5 0.13 6.7 0.16 11.2 0.22 11.0 0.25 4.46 0.18 16.9 |
| 4.1 4.5 | Turnover Cr.88.9 | 7m. V | olume | 40.767m |

| | 5 | | | Herry | .TO!- |
|---|--------------------|---------------|------------------------|---------------|-------|
| | | <u> </u> | Anglo Amer. Corpn | 6.75 | |
| ł | 2.123 | H- or | Charter Coned | 4.05 | |
| l | Aust. 8 | (- · | East Driefontein | 14.50 | +0.10 |
| 1 | 10.67. | | Eaburg | 1.62 | +0.02 |
| | 0.90 | 1 | Harmony | | |
| I | +2.14 | 10.01 | Kinrosa | | +0.10 |
| Į | +1.47 | -0.01 | Kloof | | +0.15 |
| ł | 10.76 | | Rustenburg Platinum | 2.25 | |
| ľ | +1.40 | +0.70 | St. Helena | 41E 00 | +0.10 |
| ļ | 11.72 | +8.02 | | | |
| Ì | 11.87 | } | | 9.70 | +0.30 |
| ŀ | †1.0B | +0.02 | Gold Fields SA | | +0.25 |
| l | 11_80 10.55 | J+-0.10 | Union Corporation | 5.90 | +0.05 |
| l | ±0.79 | ***** | De Beers Deferred | 8.85 | ~0.15 |
| | tD.19 | 48.91 | Blyvocruitzicht | 6.15 | |
| ı | 10.99 | 1 | East Rand Pty | 5.50 | |
| | 12.32 | f | Free State Geduld | 30.25 | +0.25 |
| | †1. 6 8 | -0.01 | President Steyn | 14.65 | +0.40 |
| | 11.73 | +0.03 | Stiffontein | 6.55 | |
| | 19,14 | (| - Walkom | | +0.10 |
| | +1.52 | +0.12 | Western Holdings | 5.45 | +0.1 |
| | 11.68 | | Western Deep | #36,00 | +0.40 |
| | †5.35 †1.25 | +0.08 | Western Deep | 117.10 | -0.10 |
| | †2.25 | +8.85 | INDUSTRIA | 210 | |
| | 5.40 | | AECI | 3.35 | 10.00 |
| | 12.72 | .000000 | Angio-Amer. Industrial | 12.35 | +0.05 |
| | . 13.60 | | Barlow Rand | 14.33 | +0.25 |
| | +1.30 | Allenna I | CNA Investments | 4.90 | |
| | +0.85 | | Annual mage change | 1.70 | |

| ė-a | Magio-Amer. Industrial | 12.3% | +0 |
|----------------------|--|--------|-----|
| | Barlow Rand | 4 90 | |
| - | CNA Investments | 1.70 | |
| *** | Currie Finance | 0.99 | |
| 05 | De Beers Industrial | 412.05 | |
| 05 0 T | Edgars Consd. Inv | 113.25 | |
| | Edgare Second | 3.00 | 40 |
| 0.5 | Edgars Stores | 137.00 | |
| 15 | Elsburg | 7.52 | +0, |
|);););); | Fed. Volksbeleggings . | 1.85 | +0 |
| H | Greatermans Stores | 2 90 | - |
| | NUIBITE | 7.38 | +0 |
| | LTA et et al la | 12.20 | -0 |
| 16 | McCarthy Rodway | 0.80 | - |
| ìi | NedBank | 3.20 | +0. |
| | OK Bazeers | 8 10 | +0. |
| 10 12 15 1 | Premier Milling | -5.65 | |
| 2 | Pretorie Cement | 3.50 | ÷Q. |
| 15 | Protes Holdings | 3.50 | |
| n | Rand Mines Properties | | |
| 1 | Rembers 4 Competities | 2.25 | +0. |
| Ë | Rembrandt Group | | |
| - 1 | | 0.33 | +0. |
| 11. | Sege Holdings | 1.60 | +0. |
| : 1 | SAPPI | 2.55 | |
| 6 | C. G. Smith Sugar | 5.30 | +0. |
| 5 I | SA Brewerles | 1 27 | |

WALL STREET

| NE۱ | NY | ORK | | | 6.79 Low | 1 Stock |
|--|-----------------------------|--|----------------------------------|--------------------------------------|--------------------------------------|---|
| 197 High | 76-79 Lov | y Stock | Jan. | 641 ₂ 641 ₂ | 4513 | 'Coming Glas 'CPC Int'rn'ti |
| 39 32 | . 25 13 | Abbott Labs. | . 351 ₂ | 561 ₂ | 251g | CONTR |
| 45 kg 314g | 301 | AM inernational Aetna Life & Co. Airproducts | 48 | 87/3 42/4 | 29 % 29 to | Crown Zejier |
| 565; 521; | 22 | Alcan Aluminium | 1, 5441 | 211, | . 1176 | Gurties Wrigi |
| 201 _P 203 _R | 14 | . Alleg, Ludlum | 1654 | 815; 491 ₈ | 195 ₄ | Dans |
| 445; 2778 | 281 163 | Allied Chemical | . 30 - | 371. ₂ | 1 2254 | |
| 3818 81 | 891 | s - Allis-Chairners | 3054 | 245 | 143a | Deltona Dentsply Int. Detroit Edisc |
| 551g | | Amerada Hess. | . 28 kg | 165 ₄ | 151 ₂ | Diamond Sh |
| 52:a 63:a | - 201 | Amer. Arrines. Amer. Brands Amer. Broado'st | 50: | 263 ₄ | 585 | Dictaphone Digital Equip |
| 4511 | 343 231 | Amer. Can | 25 is | 464 514 504 | 515 58 225 | Disney (Walt: Dover Corp'n Dow Chemic |
| 36 241 ₂ | 20 | i Ansar, Dist. Tel. | 255e 27 221g | 341 ₂ 467 ₈ | 25 | Connect |
| 40.4 | 284 | Amer, Express | 31 28 | 130 | 975 | Dupont Eagle Pitche |
| 3512 | 165 | r Anser, Medical | 30 In 554 | 1512 | 4114 | East Airlines. |
| 465. 55!a | 30 id | Amer. Nat. Res | 384 431 ₂ | 4118 | 33 | Eston |
| 37% | 281 | Amer. Stores | 321- 6114 | 325 ₄ 181 ₄ | 1944 | E. G. & C |
| 6412 374 2312 | 274 ₀ | | | | 2951 | Eltra |
| 89% 19% | 10 | Ampex | 15% | 2812 | 375g | EmeryArfrei |
| 3158 | 24); 171; | Ancher Hocking. | 26 kg | 31 ₂ | 21 ₂ 31 ₁₂ | EmeryArfrei Emhart E.M.L Engelhard |
| 3051 3021 | 173 194 | Armco | 2176 | 323g 244 527 | 15 | Ethel |
| 1934 2018 | B12 | Asamera Oil | 1714 | 3914 4038 | 25 | FairchildCam |
| 81 la 67 la | . 271; . 431; | Ashland Oil | 2731 | 16 325g | 13 | Firestone Tire Fist, Nat. Bost |
| 3613 174 | 25 à g | Auto Data Pro | 31 812 | 25 391 ₂ | 137a | Flexi Van |
| 345 ₈ 615 ₈ | 15% | Avon Products | 55 | 33 4814 | 2874 | Florida Powe |
| 273; 3156 | 23 is | Bandor Punta | 25 | 281 | - | F.M.O |
| 294 3912 | 201a | Bankers Tr. N.Y. | 265 341 261 | 511 ₂ 231 ₄ | 39 | Ford Motor Foremost Mci |
| 291 ₈ 495 ₅ 281 ₂ | 214 35 22 | Barber Oil Baxter Travenol. Beatrice Food | 411: | 3978 | 275g | Franklin Munt |
| 4078 | 50 % | | | 337 _A | 344 | Freepost Mine |
| 25 3 43 | 14 33 21 ₂ | Bendix Benguet Cons B | 38 31 ₈ | 134 | \$ 100 | Fuqua Inds |
| 514 261 ₂ 21 | 1914 | Bethienem Steel | 21! | 1514 4914 3416 | 10 345, 19 | G.A.F |
| 74-5 j | 251a | Bosing Bosing | 741 <u>±</u> 291 ₂ | 1153 | | |
| 3114 | 2512 | BordenBord Warner | 284g | 2012 | 375a | G.A.T.X Gen. Cable Gen. Dynamics |
| 1812 | . 9 127a | Branuff Int | 135g 1612 | 3472 | 441 ₂ 263 ₄ | Gen. Electrics. Gen. Foods |
| 33.5 | 20.9 | Bristol Myers. | 3612 181 ₄ | 354 5612 2015 | | General Mills General Motor |
| 1859 1 231 ₂ 1 181 ₄ | 1210 | Brockway Glass | 1414 | 331 _m 317 _a | 163j 24 28 | Gen. Pub Util Gen. Signal Gen. Tel. Elect Gen. Tire Genesco |
| 214 | 1535 | Bucyrus Line . | 71.0 | 3114 | 2253 | Gen. Tire |
| 86 | 35.3 98 | Burrough | 7512 | 32% 31% | E 2-2 | Georgia Pacifi Geosource |
| 38 2158 124 | 147 | Burova Watch. Burlington Nthn. Burrough Campboll Soup Canadian Pacific Cana. Randolph. Camation Camar & Geher. | 224g | 441: | 33% | Getty Oil . |
| 325g | 94 L | Carnation | 2601 | 32% · | 25 h | Goodrich B. F. |
| 2078 6438 | 1.4 | Carter Mawley | 104 | 3414 3214 918 | 247 ₃ | Gilletto |
| 46 a | 36 | Celanese Corpn. | | 91 ₆ | 215a | Gould |
| 17 i 24 s | 16 | Certainteed | 16 | 145g | 111 ₈ | Greyhound Guif & Western |
| 2414 2614 | 1651 | Certainteed Cessna Aircraft Champion Inter Ch'se Manhattan Chemical Bk. NY | 215 | 7712 I | 921g | Grt.AtlanPac T Grt. North Iron Greyhound Guif & Westerr Guif Oil Halliburton Hanna Mining Harnischfeger Harris Coron. |
| 37/8 : 4400 : 27/6 : | 36 203 | Champion Manhattan, Chemical Bk. NY Chesebugh Pond | 5754 215 | 227 ₃ 361 ₂ | 1414 | Harnischfeger Harnischfeger |
| 351 ₂ | | | | 24 | 34 | Harris Corpn Heinz H. J Heublein |
| 13'; 37': | 83g 184 | Chicago Bridge Chrysler Cine, Milecron Citicorp Cities Service City Investing Cleveland Citt Coogcole Coogcole Colins Akmon Columbia Gag | 3212 | 92 . | 6110 | Hewlett Packs |
| 29 4 58 5 | 451 | Cities Service | 55 14: | 39-1 | 2951 | Hewlett Packa Holiday Inns Homestake _ Honeywell, Hoover Hosp-Corp. Am Houston Nat.G. |
| 315s 1 | 235 | Cleveland Cliff | 27:a i | 137a : | 10 : | Hoover |
| 224, 151 ₈ | 16 s 8 s | Colgate Paim Collins Aikman | 939 | 271: 151: | 20 1 | |
| 294 26 | 25:± | Columbia Gas Columbia Pict. | 27 24: ₁ | 24 323 | 1034 | Hutton (E.F.) |
| 20% (4314 | 314 | Combustion Eng. | 3474 | 65 | 441 | Hutton (E.F.) LC, Industries INA Ingersoli Rand Inland Steel Inland |
| 2012 28:5 1 | 244 | C'm wth Edison. | 26% | 16i ₂ | 35.6 111 ₂ | inland Steel |
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Companies and Markets

INTERNATIONAL CAPITAL MARKETS

BY NICHOLAS COLCHESTER

INTERNATIONAL BONDS

Christmas hides dollar blues

WHILE THE champague flowed Euro-issues and is teetering on cal Eurobond for the same and primary markets. Prices part of Swiss investors. The the dollar sector of the inter-the brink of 10 per cent for the borrower was 0.48 per cent in were up in general: liquidity is shorter instrument was the national bond market philled off best borrowers. Kuhu Loeb favour of the Yankee.

a stealthy correction of some Lehman which compiles lists of On Wednesday Kuhu Loeb seasonal boost from coupon pay perhaps because the customary market in dication of price was not

respectively leaving their holders Christmas apart some 3 per cent pooren There was something of an improvement in the background to the market last week. The dollar held up, U.S. short-term rates fell a little and the U.S. bond market perked up a bit. But the prevailing feeling in whereas the ECSC Eurobond equivalent to an annual coupon the market remained that these 9 per cent 1993, gave only of 9.99 per cent. This is the movements were irrelevant to 9.55 per cent—both for approxionly straight dollar bond curthe underlying trend and prices mately ten years.
of Eurodollar bonds dropped by At the shorter and of the about 4 per cent over the week market the yield differential

ACTIVE STOCKS

a steatiny correction of some Lemman, which complies uses of magnitude. The new issues in comparative yields, pointed out Lehman is to amounce terms ments, the German steel strike indication of December for the prime bors the attractive returns available for \$100m five-year Yankee bond lingered on (though a blue-print forthcoming, rowers Norsk Hydro and Euro, on Yankee issues at the start for Norway. There is a good for an end to it was drawn up chance that this will carry a over the weekend) and with it amounce terms priced to yield \$3.8 per cent and \$1 per cent, 1992, offered a yield coupon of 9.75 per cent, paid

9.44 per cent respectively. At to average life of 9.96 per cent semi-annually, which would be their new year prices they yield 9.82 per cent and 9.86 per cent sompthade index and yield

The Yankee bond market is between the five-year Yankee for it was a quiet week with mixed still showing the way to the Australia and an almost identi- results in both the secondary

FT INTERNATIONAL BOND SERVICE

The list shows the 200 latest interestional bonds for which an adequate secondary market exists. The prices over the past week were supplied by: Sondtrade; Knedlethank NV; Credit Commercial de France; Credit Lyannais; E. F. Hutton Services SARL; Commercial has Learnbourg; Agentere Bank Mederland NV; France, Heidring and Flatson; Credit Susse, Swiss Credit Bank; Union Bank of Switzsriand; Akroyd and Smithers; Bankers Treat hutmational; Banque Franceise de Credit International; Cricorp International Bank; Dilver Europe NV; Delter Trading Company; Dillon, Read Oversess Corporation; EBC; First Chicago; Goldman Sachs International Corporation; Hambros Bank; BJ International; Hill Samuel and Co.; Kidder Psebody International; Merfill Lynch; Morgan Stanley International; Nebbit Thomson; Saloman Brothers International; Samuel Mortagu and Co.; Scandinavian Bank; Strauss Turnbull and Co.; Sumitoma Finance International; S. G. Warburg and Co.; Wood Gundy.

rently emerging in this difficult market.

In the Deutsche Mark sector.

for credit, and there was a better tone in the domestic bond market. One exception was the recent issue for the European Investment Bank which slid to

971 from its issue price of 99. Among the new issues the magic appeal of the big American bank was in evidence again in the reception given to the DM 70m issue by American Express International Demand for this was strong, despite the fact that it is a subordinated debenture. On the other hand, the six-year note and 10-year bond being sold by Westdeutsche LB for Denmark faced a rather hesitant reception, particularly, it seems, on the

indication of price was not

· Commerzbank should today announce terms in a DM 100n private placement for New Zealand. Deutsche Bank will also launch a DM 100m public issue for an unnamed borrower. The pervading gloom about

the dollar has not helped the Swiss foreign bond primary market where the main problem is the reluctance of borrower to expose themselves to the franc. There was not one public bond issue in December and the start of the year looks fairly thin with an ICI respancing and issues for New Zealand and the Asian Development Bank the only features on the schedule.

Some bankers now feel that a really good borrower could ge away with 3.5 per cent. All this is good news for holders of existing bonds where prices bounded up last week by an average of 14 points. BY JOHN EVANS

CURRENT INTERNATIONAL BOND ISSUES Maturity Lead manager U.S. DOLLARS 6BBC Brown Boveri Fin **UBS** Securities S.G. Warburg **11Bank fuer Gemei** Finance Co. BV European Banking Co. 나는 101 1993 700 First Boston Corp. 1983 *Ind. Bank of larar Morgan Stanley CCF. Mar. Hanover Ltd. 100 1984 †Pemex Kuhn, Loeb, Lehman Bros. **TINOTWAY** D-MARKS SOmron Tateisi Blec. BHF-Bank WestLB Union Bank of Finland (g'teed Norway) 7.5 WestLB Deutsche Bank *Sorrente &V WestLB American Express Int. Banking Corp. Dresdner Bank 1985 1989 WestLB Denmark **İFinland** Finland 1988 7.02 SWISS FRANCS Norges Hypotekforening for Naeringslivet Nordinary-Bank Zurich KUWAITI DINARS tind. Bank of Finland (g'teed Finland)

EUROCURRENCY LOANS

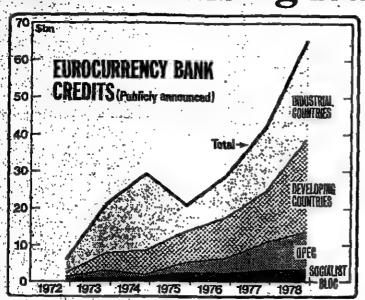
Japan spearheads rising loan volume

syndicated bank loans raised in 1978 ballooned to a record gross level of \$65.460, up from the 1977 figure of \$41.760. But last year's debt totals are particularly

misleading. The grand total disguises a heavy amount of refinancing of past loans or related debt restructuring by a wide range

of borrowers. In fact, Euromarket bankers calculate that as much as one quarter of the total may be attributable to refinancing, leaving net new syndicated lending at between \$45bn-\$50bn.

While many of last year's refinancing operations are welldocumented, like the British Treasury's restructuring of its. \$1.50n syndicated facility in July, the task of statistically sifting all refinancings is particularly hard. Many corporate borrowers in the Euromarkets, as well as national governments,



restructured their international to take advantage of the terms away from the lending debt often completely privately, remoraless, shift in market banks.

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recent Financial Market Trends publication, calculated that such operations amounted to one quarter to one-third of all Euro

an annual rate of \$51.9bn in that cuarter. Taking gross figures, the industrial countries again industrial countries again account for the largest single chink of last year's syndicated borrowings, with \$26.6bn or 40 per cent of the total, according to Morgan Guaranty's latest World Financial Markets.

The industrial nation's borrowings were responsible for a similar proportion in 1977. But, refinancing excluded, there was a sharp reduction in governmental borrowing within

the OECD area last year.

This is thought to reflect less demand for belance of payments financing, as the OECD bloc has moved into an estimated current account aurpius of \$85n last year, compared with a deficit of \$120n in 1977. Among major national OECD borrowers, Canada made the heaviest calls on the interna-

tional markets, with a total of This high rate of borrowing matched the well-documented problems of the Canadian

economy and dollar. At the same time, Scandinavia -an area with its own economic stresses—continued to use the syndicated markets substan-

DOTTOWISE 82.3bn, while Norway accounted for \$1.3bn and Sweden \$1.1bn. The developing nations' Euro market loans totalled \$25.1bn last year, or 32 per cent of gross

Mexico emerged as the main nation to tap the markets, with \$7.1bu, reflecting the need for development finance, particularly for its new oil industry, as well as the recovery pro-gramme in the wake of the economic crisis of the mid-1970s. The OPEC states' borrowings jumped sharply, to \$10bn from

This trend in part mirrors the increasing balance of payments restraints on many of the oil

One of the year's major of European Japanese banks in international lending.

banks became increasingly reluctant to lond "offshore" at very low margins, particularly as more attractive domestic lending conditions emerged.

loan participations, the Bank of Tokyo is measured by one 'league table' of syndicated loan managers to have headed the list of international banks active in Eurolending last year.

or co-managed, or a pure management position, Bank of Tokyo appeared in 97 credits last year, with a total volume of \$24.35n. One listing of last year's top

25 banks (shown below) appears to support the claim that the Japanese banks in particular have become extremely active, to the point of indulging in rateorder to capture more international loan business.

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U.S. BONDS

BY STEWART FLEMING

Signs of calmer conditions

AFTER THE losses suffered by credits raised in third-quarter 1973, which were running at investors and traders in Wall Street's bond markets in the last months of 1978, the first week of the new year has come as a welcome relief.

> Bond prices generally firmed after a weak first day's trading last Tuesday and short-term interest rates have, for the time being, halted their dizzying upward spiral. There have been declines of between five and 10 basis points (100 basis points equals one percentage point) in interest rates across most money market instruments, with three-month commercial paper, for example, yielding 10.45 per cent at the end of the week and six-month prime bank certificates of deposit yielding 11.40 per cent, according to estimates by Salomon Brothers.

Through the week the price of long-dated Treasury issues

short-term money markets have declined. been one factor in the market's favour. After two weeks, during which the interest rate on Federal funds swung violently day to day under the impact of end-year balance-sheet adjustments, stability appeared to be returning to this key short-term. money market through which the Federal Reserve Board implements its monetary policy.

There had been fears that behind the gyrations in the Fed funds' rate lay yet another tightening of credit. But on Thursday the Fed waited until Fed funds were trading at 91/2 before draining reserves, for the funds' rate is still about 10 per cent, and not a sharply higher figure which some feared.

The money markets have been reassured, too, by the slowing rose by up to half a point as in the growth of the money the market firmed, but prices in supply in the past three months the corporate bond sector were over this period. According to

The calmer conditions in the money supply measure M1 has U.S. Government still had to Some suspect that this may

be due to banks paying interest on demand deposits and the flow of funds into such deposits and out of the M1 category. But broader money measures, too. are slowing for the time being.

As Chase Manhattan Bank

says, few market participants are expecting this slower growth to be maintained for long. On the other hand, some analysts, including Dr. Henry Kaufman, of Salomon Brothers, sees in the fact that the Fed has not eased monetary policy in response to slower monetary growth and a firmer dollar, signs of a stricter monetary policy stance by the Fed. At the moment, however, with fourth quarter growth, predicted by the Carter Administration to be close to 5 per cent. the Fed can afford to err on the side of firmness in support of the dollar.

the Tressury market, the Moody's on Thursday.

offer investors record returns last week on its latest financing. On Wednesday, one year Treasury bills were sold at a discount which offered investors an equivalent yield of just over

104 per cent, and on Thursday the Treasury sold 15-year bonds at a yield of 9 per cent. But this was between 10 and 15 basis points below the yield expected earlier in the week. In the coming week investors will focus on Thursday's announcement from the Commerce

Department of producer price indexes for December and on Friday's report on the employment situation for that month. On Friday of last week the Federal Reserve confirmed the continued underlying strength of demand for credit late last year in its report that consumer tredit rose by \$4.1bn that month, the highest since June 1978. In the markets, Norway is due

to sell \$100m of notes due in In spite of the rise in prices 1984 and rated triple A by

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OFFSHORE AND **OVERSEAS FUNDS**

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48, Athol Street, Douplas, 1.0. M. 06 Rathschild Asset Management (C.I.) Charterhouse Japhiet 01-248 3999 P.O. Box 58, St. Juli Crive Investments (Jersey) Ltd. P.O. Sox 320, St. Heiler, Jersey 0334 57361 Crive Gift Fd. (C.I.) 1947 948 1736 Crive Gift Fd. (Lty.) 1967 959 1746 Cornfull Ins. (Guernsey) Ltd. Royal Trust (C.i.) Fd. Mgt. Ltd. 🖫 Drayfus Intercentinental Inv. Fe. P.O. Sov. NST2. Nasus, Shanes. NAV. Mrs. 2 1993.63 16.63 ... 7 Empen 6. Dudley 15t. Mgt. Jrsy. Ltd., P.O. Sox 73, St. Heller, Jersy. 0534 20591 E.D.J.C.T. ... 123.8 131.8 ... 3.00 The English Association 6 For Stead Pro. 1 Handelskade 24, Willemstad, Curação F. & C. Mgmt. Ltd. Inv. Advisers mLFd. Dec.27...... SUS5.41 1. Fidelity Mgmt. & Res. (Bda.) Ltd.
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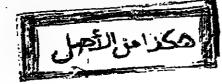
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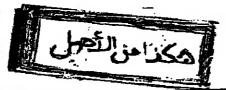
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J.E.T. Managers (Jersey) Ltd., P.O. Box 98, Channel House, Jersey. World Wide Growth Managements 10a, Boulevard Royal, Lucrations Worldwide Gin Fd 50515.19 1-1004

NOTES





USINESSMAN'S DIARY

UK TRADE FAIRS AND EXHIBITIONS

| ate | Title | venne . |
|--|--|--|
| pront | Landon International Boat Show | Earls Court |
| arrent | (Westridge 54511) (until Jan. 14). Holiday 79 Camping Outdoor Holiday Exhibition and Motor Caravan Show (01-262-2886) (until | Olympia |
| arrent | Jan. 14) Model Engineer Exhn. (Hemel Hempstead 63841) | V. cmbley Conference Centre |
| urrent | (until Jan-12) Racing and Sporting Motorcycle Show (01-226 7901) | |
| | (until Jan. 14) BFM Furniture Show (01-724-0851) (until Jan. 10) | |
| urrent | New Year Gifts, Jewellery and Leathergoods Trade | |
| 10 MM | Fair (061-969 3103) (until Jan. 11/ | Exhibition Centre, Harrogate |
| an. 14—17 | Stationery Industry Exhibition—STATISTICAL | Grosvenor House, W1 National Exhibition Centre, |
| Jan. 16—18 | Micro-Electronics for the TV Industry—TV-MEX | Birmingham |
| an 16—18 | (01-486 1951) International Domestic Electric Appliances Exbn. —IDEA (61-486 1951) | National Exhibition Centre, Birmingham |
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National Exhibition Centre, Birmingham National Exhibition Centre, Birmingham

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| OVERSEAS TRADE FAIRS AND | EXHIBITIONS |
| Hotel and Restaurant Industry Fair-HORECAVA | Amsterdam. |
| (01-228 2380) (until Jan. 11) an 10—14 Home Furnishing Textile Fair (01-734 0543) | Frankfort Paris |
| in 18—21 Intl. Trade Fair, Motor Workshop and Station Equipment—AUTO-ZUM | Dusseldorf . |
| in. 20—28 an. 22—27 International Audiovisual & Communications Show | Paris |
| RESTNESS AND MANAGEMENT (| CONFERENCES |
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Motor Industry Surveys

The motor industry is facing massive reorganisation both in the U.K. and throughout Europe. The results of this reorganisation will in the long term have the effect of making vehicle production an area with far more international co-operation.

The Financial Times maintains a close watch on all aspects of the motor industry and a part of this coverage are the surveys which deal in detail with specific areas of the industry.

1979 will see this interest in the Motor Industry continuing and expanding. Below are listed the tifles and provisional publication dates for motor Industry, and related surveys in the Financial Times.

March 9 March 29 April 30 June 6 July 18

September 24

October 16

Tyres > Specialist Cars

Fleet Management and Financing **European Vehicle Components** Vans and Light Trucks Commercial Vehicles European Motor Industry

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WEEK'S FINANCIAL DIARY

The following is a record of the principal business and financial engagements during the week. The Board meetings are mainly for the purpose of considering dividends and official indications are not always available whether dividends concerned are interims or finals. The sub-divisions shown below are based mainly on last year's limetable.

COMPANY MEETINGSshire. 12 A 2.587p (inc. supp.

DIVIDEND & INTEREST PAYMENTS— BUTY 7's Bds. Red. 10'1 79 53.67'96 Caledona Invests. Ord. 4.195918 (Int. supp. dist. of 0.070919 31'3 78' Canal Randolph Corp. 16 Eets 10 1578 Rotherham 71spc bos. res. 53,6796 Rushmoor 7tspc Bds. Red. 10 1 79 53,6796 Rothers 7tspc Bds. Red. 10 1 79 £3,6796 CUMPANT MEETINGS—
British Sugar Corpn., Hyde Park Hotel.
S.W. 12.
Comet Radiowision Services. King Charles Hoose. George Street. Hull, 12.
National and Commercial Banking, N.
British Hotel. Edinburgh, 12.
BCARD MEETINGS—
Interims:

Hart Spc Eds. Red. 7/1,8) 4::00 Kamunting Tin Dredging (M.J. 7.5 cents Rochdate Var. Rate Bds. 5/1/83 6.5.6563 Rochdate var. Rate Bds. 5:1183 £5.8563 Stockholisters Inv. Tis. 1.359 Surrey Var. Rite Bds. Red. 6:1.82 £5.8563 Tweeddale Sinc Bds. Red. 6:1.82 £1560 Whithread A & Ord. 1.32349 (anc. supp. dist. ci 0.04239 25 2/78) Yarrow 3.459

FRIDAY, JANUARY 12 COMPANY MEETINGS— Carr's Milling Inds., Crest Motel, Kings-town, Carlisle, 11.30. Construction Hidgs., 124, Chancery Lane.

DIVIDEND & INTEREST PAYMENTS— Castlepoint 10pc Bds. Red. 1877/79 Sec Fropper (James) 1p Frosby Spring Interiors 0.23958p lagle Star Insur. 3.3974p (inc. supp. dfst. of 0,0474p 1977) arly (Charles) and Marriott (Witney) 6pc 24, 2.10c

SATURDAY, JANUARY 13

SUNDAY, JANUARY 14

CONTRACTS

Defence orders for Racal receivers

awarded orders worth almost Lim by the Ministry of Defence programme by the Royal Air Racal's most advanced remotely operated and programmable communications receivers.

CHRYSLER UNITED KINGDOM has won an order worth nearly £3.25m from Swan National Rental for 500 Horizon 1.3LS and 500 Alpine 1442LS models for its hire fleet:

Al £190,000 contract for the design, construction and installa-tion of a dirt disposal conveyor and bunkering system at
Creswell Colliery has been
nwarded to CRONE AND
TAYLOR (member of the Worsley Group).

An order worth £611,000 has been placed with the Poole-based combustion division of Hamworthy Engineering, a Powell Duffryn Company, for three air heaters and ancillary control and other equipment for new puip

RACAL COMMUNICATIONS, the Bracknell-based communications systems company, has been ing centre at Bury St. Edmunds, Suffolk. The plant is due to go into operation next September (Procurement Executive) for a and will be used for processing substantial quantity of communities the pulp which remains after the cations receivers. The orders are sugar has been extracted. A part of an extended purchasing drier modernisation programme programme by the Royal Air is also being carried out and a Force and involve the supply of further order placed with Hamworthy is for a similar drier to replace an earlier model at Wissington, Suffolk.

> The BBC has awarded £50,000 contract to the trans-mission division of PLESSEY TERNATIONAL at Beeston, Nottingham, for equipment oviding private telecommunication links between London and four of its main broadcasting centres in the UK. The channeltranslating equipment, which will be used over the Post Office's 48 kHz wide-band circuits, will be installed in late 1979. It will be put in Broadcasting House in London and BBC centres at Birmingbam, Glasgow, Belfast and Milton Keynes and will establish 24 speech circuits between London and Birmingham. 12 between London and Belfast, and 12 between London

C.M.T.

"Satisfactory results in view of prevailing economic circumstances"

reports Norman Hickman, the Chairman

Despite not being able to improve on last year's record profit, it is felt that the result is satisfactory in view of the prevailing economic circumstances. Pre-tax profits were £3.729 million, as compared with £3.945 million for the previous year. An interim dividend of 1.5p per share was paid on 4 July 1978 and the directors recommend a final dividend of 1.5p per share payable on 5 February 1979, on the enlarged share capital following the recent successful Rights Issue. The group's turnover rose 6.6 per cent with all divisions trading well and competing vigorously for the available orders. The Industrial Services division was the most profitable, the Metal Processing division showed higher profits from a lower turnover, whilst the Steel Stockholding division increased sales by some 8 per cent notwithstanding the worldwide recession in the demand for steel. The Rights Issue last June was successful and raised almost £1.5 million after expenses, with our shareholders taking up 93.6 per cent of the issue. The capital expenditure programme is well in-hand and will contribute to the development of the group.

While the economic outlook is uncertain, the group is well placed to maintain its expansion in the foreseeable future and demand for our products, particularly industrial services, in the current year is continuing to improve.



Industrial Services

The year under review started The division had a record year, but increased overheads held profitability to around the previous year's level. Sales In the latter half of the year of safety equipment and protective clothing achieved a record year, with considerably increased turnover.

Metal Processing

badly, with trading conditions in the industry continuing to worsen and demand at a very low level. conditions improved considerably

Steel Stockholding

and demand became strong for good quality metal scrap. This trend has continued into the current year.

Light Engineering

Despite a higher turnover from the division, profits were below the previous year's due to mixed results from the various companies. One bright spot was exports which improved and have increased further in the current year. Order levels remain high and the division looks forward to even better results in the

for the year to 31 July 1978. Copies of the full

Secretary, The CMT Group, Halesowen Road,

Report and Accounts are available from the

Dudley, West Midlands DY2 9NR.

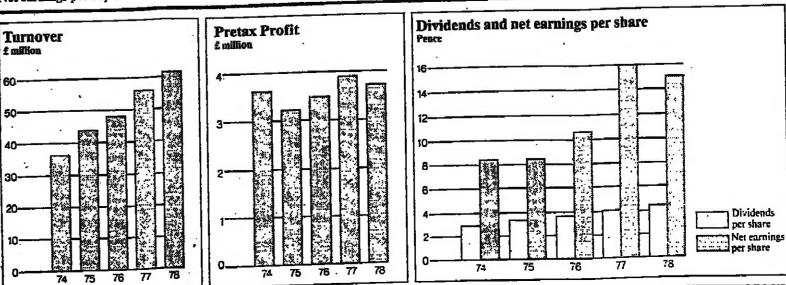
Considering that this was the fourth year of the acute recession in the steel industry, the Steel Stockholding division traded well. The above text is an extract from the Annual Report

especially in the second half. Fluctuations will remain until industrial demand for all types of steel increases, but we feel that the division has not yet demonstrated its full potential. The new financial year has started well. **Tubes. Fittings & Forgings**

The present phase of rationalisation in this division is almost complete and the additional plant has resulted in increased production capacity. Home and export markets have shown further sales increases, but margins for certain products have been under severe pressure. In spite of adverse trading conditions, profits, although lower than last year, have been maintained at a reasonable level and we are confident that further expansion will be

| The year in brief | 1978 | 1977 |
|-------------------------------------|----------|----------|
| Earnings for shareholders | £3.640m | £3.652m |
| Cost of dividends | £0.680m | £0.503m |
| Profit retained | £2.961m | £3.149m |
| Shareholders' funds | £24.632m | £20.197m |
| Ordinary dividends—actual per share | 3.0p | 2.66p |
| Net earnings per 10p share | 15.3p | , 16.0p |

Divisional analysis of results 1977 1977 1978 1978 £000 £000 £000 £000 2,135 20,495 2,112 Industrial services 23,592 376 4,200 351 Light engineering 4,895 10,678 148 149 8,632 Metal processing 1,069 16,624 17,959 Steel stockholding Tubes, fittings and 876 4,320 813 forgings 5,016 4,604 56,317 4,372 60,094



The Central Manufacturing & Trading Group Limited

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| INTERNAI | TONAL | 200 |
| FINANCIAL I | | |
| and in-depth review | v material. | |
| U.K /humpe f50 per you, f (Airmail £55) | Elsewhere (S2 per year per year) | Interest |
| Carrington House, 130 Regent let rio (1-137 8484) | Ide No 24300 | IM IF IA |
| PRITICIL | | 30J 3 10J 3 1M |
| BRITISH Industrial Stock | Price Last Yeld E at Int Red. | 136J 3 |
| "Shorts" (Lives up 98 9MTreasury 11/20: 7941 17M 17s Treasury 30: 7941 26M 26S Electric 4/40: 74-79 | to Five Years) | 15A 1F.M.A. |
| 26M 26S Electric 44pc 74-79 1M 1h Treasury 101-pc 79-11 15M 15N Electric 31-pc 76-79 3M 3S Treasury 9pc 1980# | 953 910 3 66 876 | Dividend |
| 14N 14M Treasury 94pt 18055 150 15M Treasury 34pt 77-80 150 15M Funding 54pt 78-80 55M 25M Highway 13pt 1990 | | Apr I Septemb |
| 150 15.13 Treasury 11°sc 1981#. 15F 15A Treasury 3°sc 1979-81 10 1A Treasury 9°sc 1961#. 120 12.15 sth. 8°spc 1981 | 987-1111211.63 12.15 891-107 3.91 9.08 947 25810.28 10.42 | Ja.Ap.ly. April Decemb |
| 4F 4A Exch. 912pc 1981 21F 21A Exch. 3oc 1981 17M 17N Treas. Variable 8147 | 935 at 29 12 10 15 12 52 855 17 7 3 50 9 31 973 11 10 12 39 13 66 | No Fe.Ma Mr.Ju. S. D.Mr.Ju. M.Je.S. |
| 16S 16M Treasury 14pc 82=+. | 90 5 all 11.12 941 12.45 83 3 10.7 3.58 9.09 | Ja.Ap.Jy.l F.My.Au Ap.Jy.O.J Mr.JuSel |
| 22M 22S Exch, 9/4pc 1982 5.lu 5J Exch, 9/4pc 1983 | 9911 168 10 31 1281 874 112 9.96 12.72 | J.Ap.Jy. F.My.Au.I F.MyAu Mr.Je.S. |
| 21A 21FExch 5pc 93 | 975 118 12 29 12 74 8773 d 12 12 10 53 12 89 89% 611 11 15 12 88 | Mr.Jn.S.E My.Au.N. My.Au.N. MyAu.N. |
| Five to Fift. 15.1 15.14 Funding 51-30: 82-84# 22M | 815 at 1112 6.73 10.25 974 - 12.80 13.19 | F.My.Au. Ma.hr.Se. Mv.A.N.I |
| 26.J 26.Jai Treasury 7/ust '85-88##. | 847.ml 4121616 11.74 765 59 8.62 11.16 772.ml 2012 9.97 11.82 625 27.11 4.80 8.94 655 89 7.79 10.66 | Mr.Je.S. Ap.Jy.O.J. M.Jh.S. F.M.A.I |
| 1.1 1.10 Transport 3c 78-88 15A 15O Treasury 5c 86-95 15D 15-12 Treasury 15c 1990± 15D 15-17 Treasury 11-5c 1991 10D 16LD Treasury 11-5c 1991 50 54 Funding 5-2c 37-92± 221 22.21 Treasury 12-5c 72± | 77-9 2012 9.97 1122 65-5 7.79 10.66 65-5 19 7.79 10.66 99-20 1112 13.07 13.09 91-20 412 12.83 13.17 66-5 19 9.11 14.1 96-3 15.71 13.10 13.21 85-5 19.71 17.226 12.94 92-1 19.71 13.10 13.21 85-5 19.71 13.21 85-5 19.71 | Mr.Ju.S.E J.Ap.Jy. Ap.Jy.O.J J. Ap. Jy Mr.Je.S. Mr.Jn.S.D |
| 21A 21FTTreasury 10pc 1992 25F 25A/Exch, 12J-nc '92 | 77'- 211110.76 12.06 911-34 41212.83 13.17 65- 19 9.11 11.41 96-34 19.712.26 12.94 98-1 19.713.30 13.21 19.713.30 13.25 98-1 19.713.30 13.25 | |
| O F152 | en Years | Mr.Ju.S.C Mr.Ju.S.C Mr.Js.C Alr.Je.Sep Mr.Je.S. Mr.Je.S. |
| 1M 15 Treasury 143 or 94# 22F 22A Erch. 121 or 1994 17M 17M Treasury Spc 94# | 1 1055, 1714/13.50, 13.44 1115, 25.713.62, 13.48 994, 17.715.23, 13.54 765, 11.18, 11.95, 12.63 914, 12.18, 11.95, 12.63 442, 259, 643, 10.07 11.18, 11.25, 12.60 | P. MYAU |
| 25.iu 25.ks Treasury 120c 95 1N 13. Gaz 30: 90.95 21.ia 21.ii Exch. 101.pc 1995 15M 15N Treasury 12.inc 95 15S 15M Treasury 9c 92.96 | 764 11:0115 12:5 91:4 19:12 13:07 13:25 44-2 259 6:83 10:07 81-4 15:12 12:60 13:03 92:4 9:10:13:23 13:28 98:12:14 12:73 113:1- 279:13:7 13:61 100:4 9:10:13:3 13:32 | M.Ap.Jy. N. F. My. M.Jn.S.I Jr.Oc.J. |
| 155 1550 (Treatury 16t 92/96#1. 3N 3M/Treatury 1514pt 196#1. 15N 15M/Exchapter 1314pt 196#-96 1A 10/Recemption 3pt 196#-96 22J 20/4/Treatury 1314pt 197#1. | 77 981214 1273 1134 2791377 1361 1014 9101333 1332 44 258 6.95 983 | March J.A.J.O F.MyAu S.D.Mr.Ju Mr.Ju.S.D |
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| 30M 30S Treas 151-50 '98# 20M 20N Exch 12pc 1998 15J 15J2 Treasury 91-pc 1999## 19N 19M Treasury 101-pc 1999 | 117 248 13.75 13.61 925 16.10 13.19 13.26 764 1112 12.45 12.81 83 13.10 12.87 13.11 90 2 18 12 13.19 13.27 | Feb fily for |
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| Undati IF 1A/Consels 4pc | (ed 301-ml 27.12 13.00 | S.E. L |
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| 25M 25N G.L.C. 12130C 82 10F 10Aug. Do. 12130C 1983 15My 11N Glasgow Plate 80-82 22M 22N Herts, 51abc 78-80 | TUAN | Jan. Mr.Ja.S |
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FINANCIALTIMES

Monday January 8 1979



U.S. oil companies 'charged \$1bn too much'

NINE of the largest U.S. oil companies have been accused by the U.S. Energy and Justice Departments of overcharging their customers by at least S1bn.

The accusation is contained in a suit filed on Friday in the District Court in Washington and marks the latest stage in the authorities' campaign to clear up what they allege to be the oil companies' illegal charging practices since the 1973 Arab oil embargo.

The suit names the thee largest U.S. oil companies-Exxon. Mobil and Texaco - 25 well as Gulf, Amoco, Atlantic Richfield, Shell, Phillips and Cities Service.

Specifically, it alleges that they breached Federal energy pricing regulations by overcharging on natural gas liquids. The suit claims that the com-panies inflated gas prices in dealings among their subsidiaries, and set an artificially high market value on the gas

The two U.S. Government departments ask the court to order the companies to pay refunds plus interest and penalties. Since the alleged overcharging totals \$930m (\$316m against Exxon alone) and investigations are conand investigations are continuing, the Energy Department said that alleged violations "will certainly exceed \$1bn without addition of interest and assessment of possible penalties."

Three of companies accused -Mobil, Texaco and Cities Service-quickly issued statements denying the allega-tions. The other companies are expected to follow suit, The companies' main cortention was that they had done their best to comply

with what were extremely

complex and frequently conflicting price regulations.
The U.S. Energy Department said that the latest suit brings to \$2.2bn the total over-charges involved in the composin it launched in

Last year in separate suits, "in extracting refunds from Conoco and within the private aluminium able.

BY ARTHUR SMITH, MIDLANDS CORRESPONDENT

Midlands, and threaten several companies. The association has made heads by 1987. representations to the

Michael Edwardes, BL chair-

National Enterprise Board, the Department of Industry and Mr.

night, provoked angry reactions cient to make the project profit-

Aluminium industry attacks

BL £25m foundry scheme

Mr. Peter McGrath, chairman The Light Metal Founders'- and managing director of Association said yesterday that the move might jeopardise \$100m in planned investment, create unemployment in the industry is inadequate to cope with the content of double aluminium requirements for engine blocks and cylinder

Assurances have been given that by that date BL will still be meeting two-fifths of its block and cylinder needs from private companies. Such forecasts are Industry sources say that over-treated sceptically in the in- The facility is planned to capacity exists. New facilities dustry, and there are fears that begin regular production 27

BL has attempted to get the private sector to participate in the project, but it is believed that talks with Birmid Qualcast Associated Engineering have made little progress. However, Mr. McGrath said

that the company was "still seeking a partner to strengthen British representation in this growing industry. The project, scheduled for a 25-acre site at West Yorkshire Foundries, Leeds, will double BL's aluminium casting capacity

to 13,000 tonnes. The facility is planned to

BL COMPONENTS is to build a could be provided more cheaply the new foundry will add months from the start of consequences. The plan, announced last demand is likely to be insufficent spare capacity.

The plan announced last demand is likely to be insufficent spare capacity. aluminium foundry

> Mr. McGrath said that output a head should be doubled by 1983 and there would be further improvements in subsequent

years.
The company has indicated to the trade unions that it will be necessary to close the Court-house Green Foundry, at Coven-try, and the Number 8 foundry Leeds. Further cuts will depend upon efforts to find new

A sales delegation has visited

Bow Group warning Page 4

Enterprise Board back plan to finance dealers

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

being set up to provide finance deposits.

for distributors and dealers of BL distributors have been for distributors and dealers of BL cars.

The scheme will enable millions of pounds on deposit with BL Cars to be released to dealers who should be able to per cent on their money.

Dutton-Forshaw Group estimated yesterday that it would get back about £3m from BL. Another blg distributor. Mann Egerton, said that it would have about £3.5m to use for other purposes if it took advantage of the new scheme. Finishing touches to the pro-

ject, put together by the enterprise board with the assistance sidy for BL. "The financing of N. M. Rothschild, merchant bankers, should be made tomorrow. It might be formally shares in it." morrow. It might be formally launched by the end of this month.

tion. Wholesale Motor Finance, Dealers now have cash on money we have tied up on deposit with BL Cars, the deposit with BL Cars."

amount based on a percentage The scheme would help big of forecast sales. The system distributors by providing stock success of our only major has caused severe difficulties to funding off the balance sheet. British owned motor com-

AN IMPORTANT role is to be when car prices have risen played by the National Enter- rapidly and they have been prise Board in an organisation called on to "top up" their bulk

time.
The arrangement has been most

importers of cars to the UK use the cash more profitably. At and is almost universal in the present they receive a token 1 U.S. for financing dealers' car 'Challenge'

Colonel Charles Gray, deputy

chairman and managing director of Dutton-Forshaw, said yesterday: "The money will be offered at a commercial rate but it will not be expensive." He dismissed suggestions that the scheme represented a sub-sidy for BL. "The fluancing

Mr. James Campbell, chairman and managing director of Mann Egerton, said that the proposed system would "proproviding credit for BL car vide us with a challenge to use dealers to finance their stock much more effectively the

The Enterprise Board is panies."

expected to take a 75 per cent shareholding in Finance. Motor Dominions Trust, the finance house, will probably have 5 per cent and the Post Office Pension Fund about 7 per cent. The Coal Board Pension Fund might take 7 per cent, but that

has still to be agreed.

The appearance of the new organisation will relieve BL Cars of the administrative bur-den involved in dealer finance without damaging its cash flow. Japanese importers.

Meanwhile, the two previopsly separate dealer and distributor councils representing Austin Morris and Jaguar Rover Triumph vehicles have merged into one new council, representing more than 2,000 outlets for BL Cars.

Mr. Ron Carbutt, chairman of the new council, said: "We can now speak with one voice for all Austin Morris and Jaguar Rover Triumph franchise holders and make a more co-

UK wins Chinese plastics plant order

A SECOND UK process plant manufacturer has made an important breakthrough in China

petrochemicals plant. The contract for the construc-

Japan. The order for a 140,000 tonnesa-year high density polyethylene plant is worth about £26m and

The deal results from two months of intensive negotiations in Peking. John Brown will carry out engineering, supply, supervision of construction and commissioning as part of China's rapid expansion of its

chemical industry.

Generally the UK process
plant industry has not yet met
with as much success in China as its competitors, particularly West Germany and Japan. Davy Powergas made the first breakthrough last August when it was awarded a £35m contract for the construction of two oxo-alcohols plants for the manufacture of

winning a contract to build a

tion of a plastics plant has been awarded to Constructors John Brown in the face of strong com-petition from Uhde-Hoechst of West Germany and Mitsui of

BL has been looking the company estimates among the dealership network more than 60 per cent of the equipment will be procured in

THE LEX COLUMN

Gilts and the White Paper

week's Last attempt by equities to start 1979 202 on a bright note failed to generate any echo in the long end of the gilt-edged market.
The fears of a winter of
damaging labour disputes are
rapidly being borne out, and
estimates of the likely inflation rate for the year are gradually. being edged upwards.

The first economic milestone of 1979 will be the publication of the public spending White Paper-approved by the Cabinet before Christmas, and likely to be released around the middle of January. There is no great-mystery about the size of public spending plans for 1979-80, which are likely to envisage growth of a little more than growth or a inter more than
2 per cent compared with the
current year. This is well,
recognised already within the
City, and partly explains why
brokers are making nervous noises about next year's public sector borrowing requirement. But there remain two aspects of the White Paper which are being keenly awaited.

One fear is that the 2 percent rise could, in some way, be misleading. Memories are fresh of last year, when a similar modest increase was claimed—but turned out to be based upon the planed out to be based upon the planed out to be based. the planned outturn for 1977-78. Since the Government had substantially underspent in that year, the planned increase on actual spending was much greater—of the order of 6 per cent. This year, public spending has been close to plan (some fear that it has in fact been above target) so there should

not be room for such discrepancies. But there remains a nagging anxiety that in an Election year the figures may be worse than they look at first. sight.
The second problem is more fundamental—it concerns the medium-term prospects for

medium-term

public spending. The White Paper itself will apparently include 2 discussion of the likely economic back-ground over the next few years, a period when Government revenue from the North Sea will be building up rapidly. The question is whether the buovancy of revenue will be used to boost the rate of public spending growth, rather than sure draft will, propose two cut the deficit—just as the alternative supplementary statethe oil is currently being used to sustain high consumer spending rather than the more noble

Paper last spring. Sea bonanza would ever be used simply to help balance the Bud-



rather than for some politically more rewarding purpose. But now the gilt-edged market looks into 1979-80 and sees, even after several years of economic recovery, and in spite of nearly filbn extra from the North Sea, a PSBR 22 large as a proportion of GDP as in 1978-79. This is assuming that the Government has the political will and Parliamentary power to index specific indirect taxes. The institutions are comfortably placed for liquidity and there is no implication at this stage that extra strains will be placed on the system. At the same time, there is an air of inevitability about where that cash will have

Inflation accounts

Inflation knows few boun-

daries, and with it goes its fel-

low traveller inflation accounting During the past few months the year on year rate of consumer price rises in the U.S. has been running above the UK level, which sets an appropriate background for to-day's press conference by the U.S. Financial Accounting Standards Board. This will prepare the way for the publica-tion later this week of a new exposure draft on inflation accounting, replacing the original draft on general purchasing power accounting which was scrapped when the Securities and Exchange Commission insisted on replacement cost dis-

closures by major companies.
It seems that the new expoalternative supplementary state- demning itself and the public ments for U.S. companies (the to an indefinite period in which basic accounts continuing in listed company accounts contain historical cost form as before), two profit figures on the basis. They will be able to give GPP presumably, of two "true and information; or they will be fair" views. The IASG is able to present current cost resigned to the inevitability of They will be able to give GPP Perhaps it was always figures (presumably tying in this double vision persisting unrealistic to expect that the with the SEC requirements) until users turn, as a matter of Government's share of the North with an overall GPP adjust course, to the CCA accounts

The Americans are thus following a cantious, flexible approach, as has the accounting profession in Britain following the demise of the exposure draft ED18 in 1977. Here, the Inflation Accounting Steering Group is also close to producing another exposure draft-which may see the light of day during the coming spring, although it has yet to be presented to the Accounting Standards Committee. The latter will be reluctant to promote anything which it sees as too ambitious or complex for the accounting profession to swallow. may see the light of day during profession to swallow.

Experience with the interim Hyde guidelines has been patchy. Among the largest companies—the top 100, say—more than half have followed the recommendations. But com-pliance has fallen away drasti-cally with size. Out of some 1,100 annual reports received by the LASG up to last November, only 40 per cent included a Hyde statement or something near it. Taking all listed companies—including a great many quite small ones—the rate of compliance has probably been under 20 per cent. However, companies would have to take a full standard

much more seriously than the present voluntary guidelines. The intention is to build on the guidelines so that annual reports will include a full supplementary CCA profit and loss account, together with a simplified balance-sheet. The other main step forward will be to refine the gearing adjustment, on the lines of the twotier monetary adjustment already ploneered by ICL. An adjustment for monetary workcapital items perhaps limited strictly to debtors and creditors will be made along with the existing depreciation and cost of sales adjustments. before arriving at a so-called entity profit. There will then follow a second monetary or gearing adjustment to reflect the extent to which the impact of inflation on loan capital affects the level of profits accruing to shareholders.

The ideas are promising, but progress is slow, and the accounting profession is conment to give comparability from first. Here, as always, the infla-one year to the next.

Continued from Page 1

Policy implications of lorry strike

Ministers, though the feeling was that the party's electoral chances were being severely damaged by the disruption caused by the disputes. This point is likely to be made

again when senior Ministers meet members of the TUC's Economic Committee on Thurs-

Ministers seemed to be trying to dispel any idea that the Gov-ernment would be panicked into hasty action. Mr. Rees repeated Mr. Healey's warning that if there was a pay explosion the Government would have to claw the excess money back through monetary or fiscal measures. But he emphasised that such

a decision would be taken by the Chancellor, and as part of the Budget,

Mr. Roy Hattersley, Prices Secretary, and Mr. William Rodgers, Transport Secretary, are understood to have been in direct touch with officials of the Road Haulage Association, telling them that the present 15 per cent offers are them-selves too high and the association must casure that it does

not go beyond them.

The association says it is concerned that the Government will place a restraining order on charges made by road

hauliers.
The Government's power to use price controls as a means of penalising employers who pay above the 5 per cent guideline are limited because of profit safeguards clauses in the

The lorry-drivers have submitted a claim worth 25 per cent in straight money terms, basic rate of £53 for drivers of the beaviest vehicles, to £65. be with profiteers trying to cash They want a shorter working in on "shortages," a spokes week, partly in an attempt to man said. protect earnings against cuts in overtime necessitated by EEC

Regional offices of the Ministry

Although the thaw is easing the pressure on fresh food supplies, the troubles in the road transport industry bave caused considerable confusion

This afternoon a senior delegation from the food manufacturing industry, including officials from the Food and Drink Industries' Council, the Brewers' Society and the Food Manufacturers' Federation, will call at the Ministry to brief officials on the threats posed by the possible widespread disruption of fuel supplies and the spreading lorry drivers' strike. The British Sugar Corpora-

tion is beginning to suffer. It said oil supplies had started to run out at some of its 17 fac-tories, which are at the peak of the sugar-beet refining season. The plant at Felsted, Essex, has shut and production at key

factories in Ipswich, Bury St. Edmunds and Ely is also Serious holp-ups damage prospects of a bumper home-grown sugar crop this year. About 1m tonnes of beet are harvested and awaiting pro cessing. Sugar content may be seriously damaged if processing is delayed and particularly if

The Milk Marketing Board is still fearful about the next week. Some 30 per cent of national milk production—300m litres a day—is collected by contract hauliers who may be affected by industrial action. The rest is picked up by the board's own tanker fleet (40 per

the roots are frozen.

cent) and vehicles run by Unigate and Express Dairies (30 per cent). The National Farmers' Union was almost cheerful about the prospects for fresh vegetable supplies this week. The shoppers' main problem in the next few days would probably

Harvesting conditions had eased with the weather, and since a large proportion of home. Christopher Parkes writes: grown produce was shipped to market by farmers themselves of Agriculture will file regular or by farmer-owned co-situation reports to the White- operatives, supplies could be expected to improve and prices

So far the NFU, feed companies and some individual farmers have maintained deliveries to factories and farms, thanks in the food industry and a to ad hoc arrangements with measure of panic among con- local union branches and pic-

Germans near peace on steel

BY JONATHAN CARR IN BONN

strike may end on Thursday as the result of an agreement between employer and trade union representatives. But there are hurdles to be cleared before a return to work becomes

The complex accord reached

after a 15-hour round of negotiations followed 41 days of strike—the first in the German steel industry for about 50 years. It covers more pay and free time, but its basis remains that of a 40-hour working week. demand of the trade union, IG-Mctall, for a move towards a 35-hour week, may be seen by part of the rank and file as not fulfilled. But the union can argue that this move has been made through agreement on free shifts and extra holiday, even if it is not expressly acknowledged in the text. Herr Eugen Loderer, chair-man of IG-Metall, and Dr. Franz

Josef Weisweiler, head of the Iron and Steel Employers Asso- alone.

THE WEST GERMAN steel ciation, have expressed confidence that the agreement will

I is now up to the 124-member main decision-making body of IG-Metall to pass judgment today on the accord. If it ended. decides in favour, a ballot among the union membership will begin immediately. The ballot is expected to end

by Wednesday. If only 25 per cent of those entitled to vote are in favour, work can begin again on Thursday morning. About 100,000 steel workers in the North Rhine-Westphalia, Osnabrueck and Bremen areas are not working, either because they are on strike or because they have been locked out by the employers.

The cost of the stoppage is

hard to assess. But the stell companies are thought so far to have lost close to DM 600m (£161m) and the union about DM 100m in strike pay. About 1.5m tonnes of crude steel production was lost last month

Vehicle makers-most recently Volkswagen-have said that they might have to introduce short time work from mid-January if the strike has not The accord covers a wage and

salary increase averaging 4 per cent, backdated to November 1 and running for 15 months. This matter was hardly in dispute. Further, from this year all steel workers will gain two days

extra boliday. Those who have to do night work will be given four free shifts and workers over 50 will gain a further two free shifts. In 1980, all workers will gain

another one day's holiday. And in 1981 night workers will be given another two free shifts and the over-50s one more free shift annually. Further adjustments will mean that in 1982 the union will be able to claim that one of its long-standing aims, for all, has been achieved.

Weather

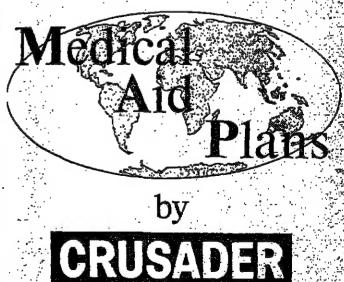
UK TODAY OCCASIONAL rain. Bright in places. Snow on higher ground London, E. Anglia, Midlands, E., N.W., Cen. N. England, N. Wales Occasional rain. Bright inter-

vals. Max. 6C. (43F.).
S.E., Cen. S. England, Chan. Is.,
S. Wales
Cloudy. Rain. Hill fog. Max.
8C. (46F.). Lakes, Lo.M., N.E. England. Northern Ireland, Borders, S. Scotland Sunny intervals and showers trong winds. Max. 5C. (41F.)

Northern Scotland, Orkney and Shetland Sunny intervals. Snow on high ground. Strong winds. Max. Outlook: Cold, Rain, Snow in

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Company loans tax relief hint

BY DAVID FREUD

THE NEXT Finance Bill may contain tax relief for companies on raising loans and a relaxation in provisions covering interest on overdue tax.

A strong possibility in the Bill is further extension of the stock relief scheme introduced in 1974 after firm promises from senior Treasury Ministers. The scheme, which provides tax relief on increases in the

stocks, may also be adjusted to help small companies. Capital allowances for commercial buildings are a possi-bility, depending to some extent on whether Ministers find funds to finance them. Also on the cards is upgrad-

ing of status of the Special

Commissioners for Income Tax,

who hear the first stages of

complex tax disputes. The Confederation of British Industry and the Consultative Committee of Accountancy Bodies have argued strongly Bodies have argued strongly is charged on overdue income against non-allowance of busitax are likely in line with ness expenses, including cost of recommendations by the Select raising finance, known as nothings."

They said that it placed British industry at a severe disadvantage to its foreign compe-titors, and inhibited setting-up on giving capital allowances to of new businesses, or expansion. new commercial buildings—
Business expenditure which something that a Royal Comdoes not qualify for tax relief mission first recommended in against profits include cost of 1952. long-term finance; of setting up businesses, or expanding them; expenditure on

While changes in all these areas at the same time would overload the legislative space available. But there is a strong likelihood that costs of raising money will be made tax-allowable, as well as pre-trading expenditure

that would be deductable if incurred after beginning trading; and some capital costs relating to waste and effluent

Committee on the Ombudsman.

period before interest is assessed be extended by six months. There could be some move The introduction of capital

allowances for hotels last year is seen as breaking the ice for projects that prove abortive; such a development, although and various types of spending the cost to the Exchequer could associated with closing of a cause delays.

Furniture trade in the doldrums Financial Times Reporter

BRITISH furniture makers are putting on a brave show this week at the Birmingham performances of UK furniture manufacturers and distributers -published recently by Inter Company Comparisons-reports " alarmingly uneven " results in It recommended that the the furniture trade.